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THE UNIVERSITY OF ALBERTA

MIGRATION AND MOBILITY IN NEWFOUNDLAND AND LABRADOR : A STUDY IN POPULATION GEOGRAPHY

by

© MICHAEL STAVELEY

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

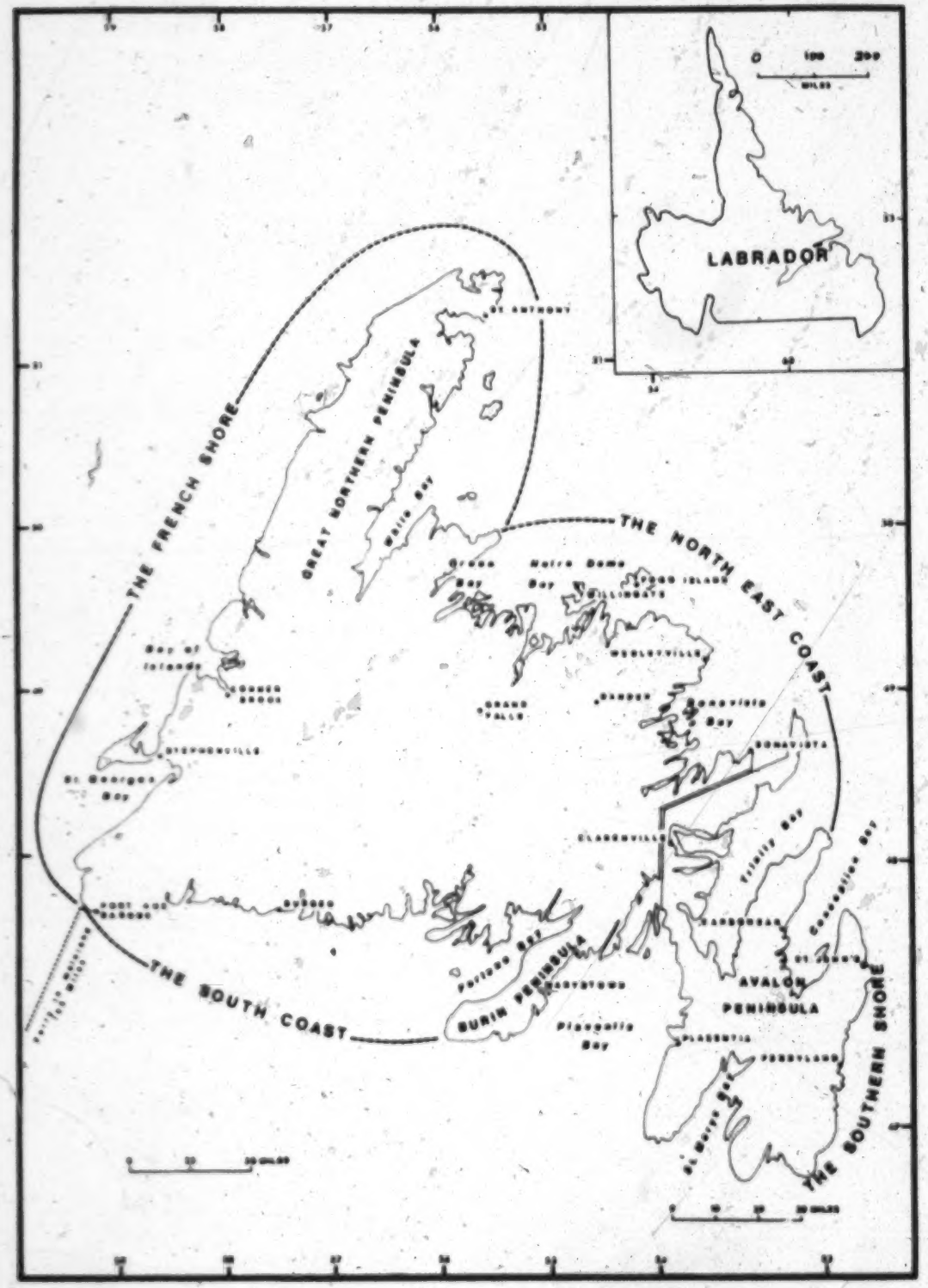
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF GEOGRAPHY

EDMONTON, ALBERTA

FALL 1973



Frontispiece: Newfoundland - Location and Place Name Map

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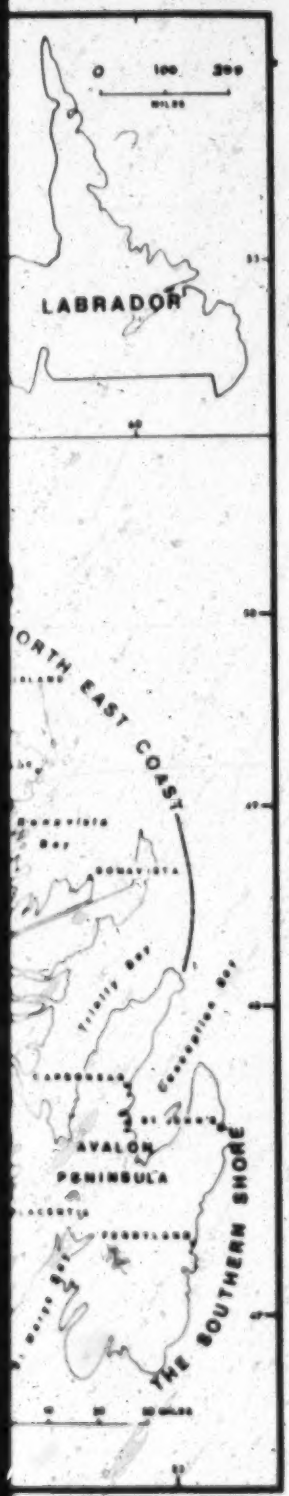

lace Name Map

Note

Designations for the coasts are popular rather than official and therefore vary in their precision -- thus, for example, "The South Coast" is sometimes used to include Placentia Bay, and "The North East Coast" is sometimes used to include White Bay.

"The French Shore" was the area in which fishing rights were ceded by treaty to France in the 18th century. These rights were not abrogated until 1904, and the designation was commonly used throughout the 19th century.

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Migration and Mobility in Newfoundland and Labrador : a study in population geography

submitted by Michael Staveley

in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

A pervasive element in the human geography of many areas is the phenomenon of rural depopulation through out-migration. This phenomenon has spread widely over the past two centuries and can be examined as a spatial and temporal progression through techniques commonly utilised in population geography.

Though rural out-migration is widespread, its incidence is particularly felt in areas which are spatially and economically peripheral. Newfoundland is a good example of such an area: it is characterised by a fairly limited and inflexible rural economy but it also has within its boundaries a frontier area, Labrador, which has acted as a safety-valve for the partial relief of the longer-settled and overcrowded portions of the island.

The significance of population to geographic study is discussed and a representative selection of substantive and theoretical works on migration is then analysed. The notions of the migration field, the migration region and the mobility transition are selected as three organising concepts by which the phenomenon of human migration becomes a topic for geographic investigation.

The growth and distribution of population in Newfoundland is traced from the beginnin of the 19th century to 1935, and the significance of involvement with Labrador

is examined. The scale and spatial organisation of internal movement over the period 1935-45 are then discussed, particular emphasis being given to the significance of migration regions. This is followed by an examination of the patterns and causes of rural out-migration down to 1966.

The contemporary movement of Newfoundlanders to Labrador, and the social and political background to that movement is discussed in detail and a Labrador Migration Field defined. This is followed by an analysis of the causes of the Labrador migrations and, consequent on these causes, the division of the Field into different sub-regions.

The utility of the concept of the mobility transition is admitted, though in a modified form, for the understanding of Newfoundland's population geography; the notion of the migration field is useful as a descriptive designation but cannot be used as a rigorously definitive measure for conditions other than those by which the field is initially defined; the migration region is not felt to be a persistently powerful or immutable feature, and is seen in some ways to be in conflict with the migration field. In conclusion, some comments are made on the significance of the geographic study of population for applied geography and social and economic planning.

ACKNOWLEDGMENTS

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Endpiece Electoral Districts of Newfoundland as used in this study

CHAPTER I

POPULATION IN GEOGRAPHY

The novelist C.P. Snow, in his first major work, placed in the mouth of one of his central characters a statement of particular interest to geographers, though it would appear little noted by them:

> "'I'm only just beginning to realise', said George, 'what a wonderful invention a map is. Geography would be incomprehensible without maps. They've reduced a tremendous muddle of facts into something you can read at a glance. Now I suspect economics is fundamentally no more difficult than geography. Except that it's about things in motion. If only somebody could invent a dynamic map--'"[1]

It would perhaps be unfair to tax Snow with misinterpreting the nature of geography -- indeed, one suspects that his implied assessment of the relative thrusts of economics and geography is not too inaccurate for the time of writing. It is clear however that in the three decades since Snow's incisive observation was made, geography has advanced enormously from preoccupation with the fixed and static, to concern for the fluid and dynamic. In no area has this shift been more marked than in the area of human

---

[1] Snow, C.P., Strangers and Brothers, London, 1940, Ch. 8.

geography, and in that area it has been especially marked in the field of population geography.

It is, after all, only twenty years since Trewartha made "A Case for Population Geography" the theme of his Presidential Address to the Association of American Geographers. In this plea he noted the neglect of population as a theme for geographic research and suggested that, in part, this neglect was due to the arbitrary division of geography into physical and cultural elements: this "common two-fold subdivision of geographical science into physical and cultural has failed to provide a special niche for population".[2] To restore balance to geographic study, Trewartha asked that population be given an emphasis co-equal with that given to the physical and cultural elements for:

> "population is the point of reference from which all the other elements are derived and from which they all, singly and collectively, derive significance and meaning. It is population which furnishes the focus."[3]

In refining and philosophically amplifying the case made by Trewartha, Hooson broached a topic which has been a matter of some contention amongst population geographers. He suggested that not only was a knowledge of the distribution of population "a useful framework for practical affairs" but that "the distribution of population is the key to the

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[2] Trewartha, G.T., "A Case for Population Geography", A.A.A.G. Vol. 63, 1953, p. 80. This was the first explicit statement on population geography in English, though European geographers had been involved with population study for some time - see George, P., Introduction à l' étude géographique de la population du monde, Paris, 1951.

[3] Trewartha, G.T., op. cit. p. 83

whole geographical personality of a region and can endow regional geography with life, meaning and interest".[4] This sentiment is more subtly repeated in the arguments of perhaps the most practised of American population geographers, Zelinsky, who saw his field as:

> "the science that deals with the ways in which the geographic character of places is formed by, and in turn reacts upon, a set of population phenomena that vary within it through both space and time as they follow their own behavioral laws, interacting one with another and with numerous non-demographic phenomena".5

This definition is probably one of the most explicit in the field, though it is not comforting, being instead rather chilling in the catholicity of its embrace. It is the particular emphasis that Zelinsky gives however, rather than his catholicity, that has caused later population geographers to question the adequacy of his early definition. The argument would seem to be with his ultimate concern for the "geographic character of places" (c.f. Hooson's "geographical personality of a region"). His critics, admittedly mild, have pointed out that "the emphasis on the character of places and areal differences minimizes, at the very least, the import of spatial processes, and stresses difference at the expense of regularity".[6] The same class of

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[4] Hooson, D.J.M., "The Distribution of Population as the Essential Geographic Expression", Canadian Geographer, Vol. 7, 1960, p. 16.

[5] Zelinsky, W., A Prologue to Population Geography, Englewood Cliffs, 1966, p. 5.

[6] Demko, G.J. et al., "The Geographic Study of Population", in Demko, G.J. et al. (eds.), Population Geography: a Reader, New York, 1970, p. 2

criticism is directed at Trewartha -- "the major difficulty with (Trewartha's) definition is its implication of emphasis on the unique".[7]

It is, of course a perennial cause of conflict in geography as to whether the unique or the regular is the proper goal of investigation, and it is probably true to say that the regular, made respectable by the progressive advances of the physical and biological sciences, now commands the attention of the majority of geographers as the most appropriate focus of study. It would be a pity however, if, by so defining and directing our studies, we omitted to accept that unique cases are possible and even probable: indeed the very term 'regular' implies by definition events or phenomena which are non-regular. Insofar as geography is at least partly associated with the social sciences, it would be unwise, and even unscientific to deny the existence of the unique. There is however no reason why research should not be prosecuted along what are now orthodox lines of scientific enquiry in the search for regularity, yet with a lively awareness being maintained for the deviation which, not itself substantial enough to constitute another order of regularity, may well be classed as unique.

The criticisms of population geography as conceived by Trewartha, Zelinsky and Hooson, outlined above, may be resolved to a degree in the analysis of Ackerman who has emphasised that the end result of the search for areal

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[7] Loc. cit.

differentiation alone might be somewhat barren: "we see it ... ending in a somewhat static goal".[8] The escape from such an impasse is to be made firstly through the establishment of genetic relations, or processes, and finally through the study of covariant relations: in essence the emphasis is to be on processes and spatial interactions which illuminate and carry forward the reality of areal differentiation.

Although there appears from the above analyses to be some emergent consensus amongst population geographers as to the scope, definition and appropriate methodology of their field it is less certain that the impact of the subfield on geography as a whole had been all that Trewartha, for example, would have wished. This experience however is not confined solely to geography, and one of the clearest statements of the oblique attention paid to the systematic study of population by social scientists has been made by the American economist, Easterlin:

> "The attitude of economists toward population growth is curiously ambivalent. The effects of population growth are accepted as important ...With regard to the causes of population growth, however, the attitude of economists can best be described as laissez-faire. At the risk of generalizing too freely, it would probably be fair to say that the typical treatment of population growth in economic theories is as an exogenous variable, whose movement is given by demographers ---(but) there is scope for fruitful research into the causes of population change compatible with

---

[8] Ackerman, E.A., "Where is a Research Frontier?", A.A.A.G., Vol. 53, 1963, p. 434.

economists' training and experience."[9]

With the substitution of "geographers" and "geographic" for "economists" and "economic", and a broadening of the theme "population growth" to "population", this statement is not infrequently relevant to much of what is offered as human and economic geography today.

The 'Phenomena' of Population Geography

What then are the "population phenomena" noted by Zelinsky as the medium through which the study of population geography contributes to a larger geography? In essence, these phenomena may be conveniently classified into structures and processes. Population structures are those attributes relating to the size and internal composition of a particular group: they embrace such facets of population composition as sex ratios, marital status and age-structure. Population processes by contrast, are those phenomena which flow out of the basic structures and which, in their direction and frequency, are prima facie heavily dependent on the structures: the major processes are usually counted as fertility, mortality and migration. Thus differentials in the level of process may relate to differentials in the level of the basic structures: for example, low fertility may be a consequence of an old age-structure, and high levels

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[9] Easterlin, R.A., "The American Baby Boom in Historical Perspective", American Economic Review, Vol. 51, 1961, p. 869.

of migration may result from an imbalance in sex-ratios. Seen in this way, the structures are the static base out of which flow the dynamic processes.

In practice, the actual course of events is a good deal more complex than this oversimplification would suggest. In the first place it would seem evident that there is, of necessity, a reciprocal relationship between structure and process: in the examples cited above, is it not possible for old age-structure to be a function of low fertility, or imbalanced sex-ratios to result from high but unbalanced migration levels? In the second place, it is probable that elements of both structure and process will interact internally: thus for example, sex ratios may affect marital status, and fertility may affect migration.

The answer is of course that structures and processes are, together and independently, inextricably intertwined and causally related, frequently in a 'chicken-egg' manner: as Zelinsky expresses it they "follow their own behavioral laws, interacting one with another".[10] Thus the distinction between structure and process is useful only insofar as it is seen as a heuristic device. In the context of population studies it can not be viewed as a definitive classification and, by extension, the same may be said of the distinction between 'static' and 'dynamic': the semantic difference oversimplifies the complex chain of

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[10] Zelinsky, W., op. cit., p. 5.

causation that properly comprehends human actions and reactions.

As if to further complicate this issue, Zelinsky reminds us that the interactions amongst demographic phenomena are also conditioned by the influence of "numerous non-demographic phenomena".[11] This complication however may be turned to account, for the judicious selection and examination of non-demographic phenomena which are critically associated with the demographic may help to indicate the direction and strength of the relationship between demographic structure and process.

Focus and Rationale of the Present Study

In this study an attempt is made to examine some critical aspects of the geography of Newfoundland seen from the point of view of population geography. The particular process chosen for examination is that of migration, though, as demonstrated above, the complex interconnections amongst all population phenomena make it necessary to consider a broader range of phenomena to render this single facet in focus.

The rationale for selecting migration as the focus of study is that it is a persistent and dominant element in Newfoundland's geography. Most peripheral areas of the Western World share a number of characteristics which both

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[11] Loc. cit.

inform, and arise from, their geography, economy and social structure: one of the most pervasive of these characteristics is rural depopulation and its associated phenomenon of migration, particularly rural-urban migration. Although rural depopulation and rural-urban migration are not restricted in any way to peripheral areas, they have had a profound effect on the margins and near margins of the ecumene in both Europe and North America where fair to excellent statistical records, maintained over at least the last century, make possible their detailed examination. A potential community of interest is therefore suggested amongst geographically similar areas in Scandinavia, Highland Britain and Atlantic Canada -- the peripheral zones of what may be called the Northern North Atlantic. An additional focus for the study of Newfoundland's migration is that in Labrador, Newfoundland has a northern frontier zone which is a developing outlet for surplus population, a fact of particular interest in the Canadian context.

A further rationale for this study was not apparent when the work was commenced but has recently sprung into prominence: in brief, it has been suggested that Newfoundland, with a population in 1971 of approximately 525,000 is grossly overpopulated. The scientific justification for this judgment is lengthy and is contained in a document written by the economist Copes[12] and published in 1972 by the Canadian Council

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[12] Copes, P., The Resettlement of Fishing Communities in Newfoundland, Ottawa, 1972.

on Rural Development, though the Council was careful to disavow any responsibility for, or concurrence with the author's findings. The cause of this overpopulation is said to be the inability of the provincial economy to support a labour force larger than that derived from a total population of roughly 300,000. The suggested remedy for this problem is the development of federal-provincial programmes to encourage a substantial out-migration to mainland Canada and a more limited internal migration to favoured locations within the province. These proposals have not met with an enthusiastic response in Newfoundland.

The brevity of the foregoing summary cannot do justice to the nuances of Copes' analysis. But it is a fair assessment that Copes' work relies heavily, both volumetrically and conceptually, on gross economic indicators. By contrast, his treatment of population is both scant and highly generalised: the chapter entitled "Population Pressures and Migration" occupies only 15 of 172 pages in his text. In a work advocating that the population of a Canadian province be reduced by 40% this might be seen as something of a lacuna: or perhaps it is a classic example of the tendency noted by Easterlin.

In fairness to Copes, it should be said that fuller analyses of Newfoundland population structures and processes are not readily available. Those existing are so highly generalised as to be, as often as not, misleading. But while it is not a primary aim of this study to either affirm or deny

Copes' overall thesis, it is apparent that many of the data realised by the research may amplify and modify his analysis.

Thus, this study is conceived as lying within the area of substantive and theoretical research in a particular sector of the Northern North Atlantic fringe, and at the same time having a potentially applied utility in its local context.

Substantive and Theoretical Work on Migration

The literature on migration is vast and rapidly increasing. But after nearly a century of work on this theme many of the basic premises or theories held to account for migration are substantially unchanged. These basic premises, commonly dubbed the 'Laws of Migration', were developed by the 19th century statistician Ravenstein. Ravenstein's 'laws', as codified by Lee, the most thoughtful contemporary analyst of his work,[13] are in essence fairly simple. They incorporate the following principles of geographic significance:

1. Migration and distance -- most migrants travel only short distances, there being an inverse relationship between the volume of migration and the distance travelled. Longer migrations tend to be to major centres.

2. Migration by stages -- a centre of rapid growth tends to attract migrants from neighbouring districts. The places vacated by these migrants are "filled by migrants from more remote districts, until the attractive

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[13] Lee, E., "A Theory of Migration", Demography, Vol. 3, 1966, pp. 47-57; reprinted in Heer, D. (ed.), Readings on Population, Englewood Cliffs, 1968, pp. 181-193 which is the pagination referred to in this work. Ravenstein's work is found in the Journal of the Royal Statistical Society, 48, 1885, pp. 167-227, and 52, 1889, pp. 241-301.

2. (cont.)
force of one of our rapidly growing cities makes its influence felt, step by step, to the most remote corner of the kingdom".

3. Stream and counterstream -- a stream or current of migration tends to develop a counterstream or countercurrent.

4. Urban-rural differences -- urban people have less propensity to migrate than those from rural areas.

5. Sex differences -- females tend to dominate the migration effected over short distances.

6. Technology and Migration -- migration tends to increase with advances in technology, commerce, manufacturing and "locomotion".

7. Dominant motives in migration -- although many factors contribute to the causes of migration, the economic motive is dominant -- "the desire inherent in most men to 'better' themselves in material respects".

It has been the comment of a number of students of population that little advance on Ravenstein's schema has been made: as Lee points out, despite "literally thousands of migration studies...few additional generalisations have been advanced".[14] Perhaps Lee himself has gone farthest towards refining some of Ravenstein's now historic axioms.

Lee begins by conceptualising the act of individual migration into its component parts: "an origin, a destination and an intervening set of obstacles".[15] Both origin and destination are characterised by factors which both attract and repel potential migrants in varying degree --

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[14] Lee, E., op. cit. p. 183; see, for example Mangalam, J.J., Human Migration: a guide to migration literature in English, Lexington, 1968 and Mangalam, J.J. and Schwarzweller, H.K., "General Theory in the Study of Migration: current needs and difficulties", International Migration Review, 3, 1968, pp. 3-17.

[15] Lee, E., op. cit. p. 184

these factors may be looked on as plus and minus factors. The intervening obstacles vary in their effect as their force waxes and wanes from situation to situation. By analysing in detail the range of possibilities comprehended by these three components, Lee is able to elaborate on Ravenstein's 'laws' in the form of a series of hypotheses which relate to the volume of migration, the notion of stream and counterstream, and the characteristics of migrants. These themes, and their associated hypotheses, possess varying degrees of geographic significance.

The volume of migration, suggests Lee, is largely to be associated with the degree of diversity exhibited by a country's territory and peoples: the greater the ethnic, educational and economic diversity, and the greater the areal diversity (perhaps we might say 'areal differentiation'), the greater the volume and rate of migration. Conversely, the greater the difficulty posed by intervening obstacles, the less the migration will be. On the other hand, migration tends to rise in rate and volume with the passage of time, not least because advances in technology have the effect of diminishing obstacles to movement (particularly distance) and because such advances tend to increase areal and human diversity. Finally, Lee agrees with Ravenstein, the volume of migration reflects the level of economic health and tends to rise to a peak during periods of economic expansion.

Of Lee's three categories of hypothesis, that concerning the volume and rate of migration may be seen as of

middling interest to geographers: his second category, dealing with stream and counterstream, may be of more immediate relevance for here he is dealing with an aspect of migration that possesses the geographical attributes of morphology and direction. For example, Lee notes that the main migrations are contained within "well defined streams": one of the more important reasons for this is to be found in

> "the flow of knowledge back from destination to origin, and, indeed the actual recruitment of migrants at the place of origin. The overcoming of a set of intervening obstacles by early migrants lessens the difficulty of the passage for later migrants, and in effect, pathways are created which pass over intervening opportunities as elevated highways pass over the countryside".[16]

The information flows developing with, and the new diversities resulting from a migration stream, create new perspectives on the balance of opportunities at both origin and destination and a counterstream will develop.

The volumes of stream and counterstream are seldom equal: the difference between them may be seen to reflect migrational 'efficiency'. Large differences may result in a greater redistribution of population, hence such migration systems are more 'efficient'. Lee reflects that similarities between origin and destination will result in low efficiency, but that efficiency will be high if either minus factors (push factors) are dominant at the point of origin

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[16] Ibid., p. 189.

or if intervening obstacles are great. The efficiency fluctuates as a function of other factors, particularly the level of the economy: in times of vigorous economic advance, efficiency will be high as many of the preconditions mentioned above are emphasised at such times.

Lee's third set of related hypotheses, a group of generalisations concerning the characteristics of migrants, is less immediately geographic in nature. But if differential migration is perceived as reflecting, in part at least, the areally differing characteristics of population, then the hypotheses will have some ultimate geographic significance. Of particular relevance in this category, Lee's hypotheses emphasise the selective nature of migration, the differences between positive and negative selection, and the relationship between selectivity and the size of the intervening obstacles. For example, migrants responding to plus factors at the destination tend to be more able and perceptive of opportunity, whereas those responding to minus factors at origin tend to be the less favoured elements who are 'pushed' out. A consideration of all migrants would give a bimodal distribution embracing both of the foregoing categories.

It should be stressed that Lee's 'theory of migration' is <u>not</u> couched in an assertive form nor does it purport to be 'law'. His ideas are supported by only the broadest of evidence and are presented as "a related set of hypotheses within a general framework" with the hope that at

least some may be immediately "testable with current data". Whether or not this is the case, the hypotheses as a whole are amongst the most coherent yet advanced towards a more refined understanding of the phenomenon of migration.

Many migration studies have attempted to elucidate the theories developed inductively by Ravenstein and deductively by Lee. Most concern themselves with the empirical investigation of one particular dimension of migration (whether sociological, economic or geographic) to the exclusion of others and thus make only a partial statement on the phenomenon under investigation. For all that, many studies are valuable for the insights they give into the migration structures of different communities and cultures, and for the intimations they offer of parallel processes operating in widely differing societies. Gugler's most useful collation and synthesis of studies made on African migration,[17] for example, furnishes suggestive comparisons with the norms observed in Newfoundland.

The basis of Gugler's synthesis is the strong affirmation of a major finding of Ravenstein and Lee:

> "the predominant cause of rural-urban migration in Subsaharan Africa has been economic. Given felt cash needs, the peasant's decision to seek employment for wages can be analysed in terms of a comparison of economic opportunities as perceived by him in his rural home

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[17] Gugler, J., "On the theory of Rural-Urban Migration: the Case of Subsaharan Africa", in Jackson, J.A. (ed.) Migration, Cambridge, 1969, pp. 134-155. Africa has been a rich field for the examination of migration and mobility: see, for example, Mabogunje, A.L., "A Theoretical Framework for Regional Mobility", in Regional Mobility and Resource Development in West Africa, Montreal, 1972, pp. 15-38.

on the one hand, in employment on the other".[18]

This remains true despite the high unemployment prevailing in many African urban centres because "the marginal productivity of labour approaches zero in some rural areas".[19]

This said however, Gugler recognises that non-economic factors are also of significance in the decision to migrate: other factors, particularly those of a social or psychological nature, have often been poorly defined. Thus for example, the role of marriage in rural society may push individuals into migration: "often young girls who have obtained some education are dissatisfied with the prospects marriage in the rural community offers".[20] Observations of this kind may be corroborated readily from a wide variety of cultures, as is demonstrated by Rundblad's analysis of rural depopulation in Sweden:

> "it was the girls who first began to leave... and the boys left gradually afterwards...the readiness to move is greatest among the unmarried, which is easy to understand in the light of the poor possibilities of getting married in Forestville."[21]

Perhaps the most striking element of Gugler's synthesis however is the suggestion that an interdependence between rural and urban sectors persists in the attitudes and norms of the migrants:

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[18] Ibid., p. 137.

[19] Ibid., p. 144.

[20] Ibid., p. 139.

[21] Rundblad, B.G., "Problems of a Depopulated Rural Community", in Hannerberg, D. et al. (eds.), Migration in Sweden: a Symposium, Lund, 1957, p. 186.

> "the outstanding sociological phenomenon... (is) that the great majority of temporarily urbanised Africans maintain some links with their villages of origin...even Africans committed to a full working life in town may continue to maintain close links with a rural area they consider their home...they live in a dual system...(they) regularly visit their rural homes where they make gifts, find wives, maintain land rights, build homes, intend to retire eventually, want to be buried; they receive gifts in return, offer hospitality to visitors from home, and help new arrivals in town."[22]

The rationale for this phenomenon, not normally recognised in simplistic renderings of the 'flight from the land' school of thought, resides partly in the ultimate security offered by the village: many rural-urban migrants "maintain rights to land on which they can fall back" in times of failing urban opportunity. More strange, perhaps, even highly urbanised Africans, with white-collar pensioned positions, share something of the same behavioural patterns: they "continue to care about the opinion people back home hold of them". Gugler thus sees in summary that:

> "a strong commitment of the immigrant to his area of origin is found in many parts of Subsaharan Africa. For the majority of urban dwellers such a commitment is an economic necessity. The commitment of the few who are not subject to the economic constraint appears frequently genuine."[23]

It should be noted however that such mechanisms are not limited to the Third World cultures with which Gugler is immediately concerned. For example, Luebke and Hart,

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[22] Gugler, J., op. cit., p. 146.

[23] Ibid., p. 150.

studying migration in a part (admittedly underdeveloped) of the United States, found that:

> "migration...to northern industrial centers is virtually always considered a temporary expedient. Detroit, for instance, is a place to make as much money as quickly as possible before returning to a more permanent life at a lower income level. Few migrants...even consider making a permanent home there...One man who went to Detroit in 1922 has returned and established a business in the home county with his savings; he is frequently called on for advice by young men planning to make the move to the north."[24]

The importance of this portion of Gugler's analysis is that it tends to amplify and explain the phenomenon of stream and counterstream noticed by Ravenstein and Lee. Moreover, as the foregoing example from Tennessee indicates, it is not restricted in its incidence to the developing countries but applies also to underdeveloped areas and traditional sectors of society in the economically advanced nations. It is here suggested that it operates strongly in Newfoundland, where it manifests itself in two ways: it functions to effect a counterstream, and thus diminishes migrational efficiency, and it results in the maintenance of the rural economy and landscape (houses, fields etc.) at a low level, but one short of total abandonment.

As a final contribution to migration theory, Gugler attempts to collate the findings of several workers on the supply of labour from rural sources and its relation to

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[24] Luebke, B.H., and Hart, J.F., "Migation from a Southern Appalachian Community", Land Economics, Vol. 34, 1958, p. 52.

urban wage levels. Migrant workers are often said to be "target workers" who work with definite and limited financial goals -- this state of affairs produces a situation of a "backward sloping labour supply function"[25] in which high wages do not stimulate more or harder work, but merely make it possible for the individual migrant to opt out of the labour market at an earlier date. This backward sloping function however, though true for individual behaviour, is not necessarily true for the aggregate labour supply and demand.

Following from his analysis of the economic, social and psychological bases for migration, Gugler then points to three components of the rural-urban migrant labour force. Firstly, the migrant labour force will include a minority excluded from the rural community for non-economic reasons i.e. social deviants. Secondly, there will be a group experiencing temporary hardship and dislocation, such as catch or crop failure, in the traditional sector. Both these groups will move into the urban labour market at very low, even subsistence, wage levels. Beyond these levels of remuneration, labour migration will increase to the degree that individuals perceive advantages in eschewing their traditional rural activities. The level of potential participation of these sectors of the labour force is portrayed schematically in Figure 1.1. It should be added finally that the more the above 'structure' of a rural-urban migrant labour force becomes developed, the greater the

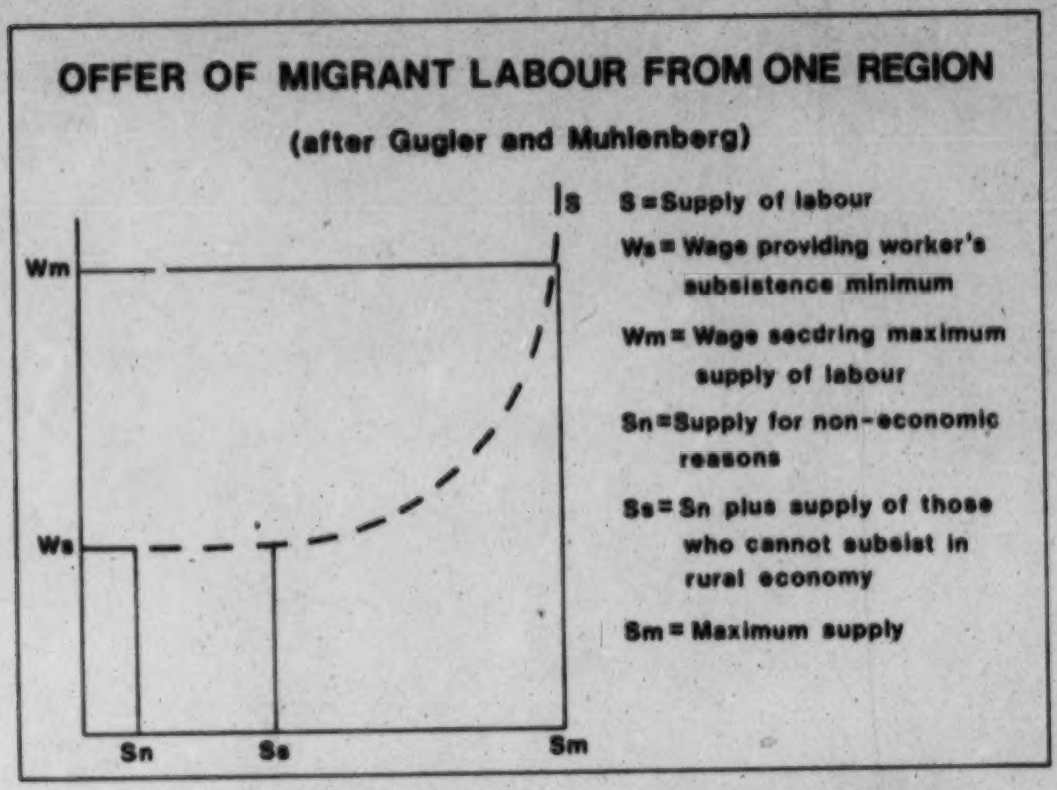
OFFER OF MIGRANT LABOUR FROM ONE REGION
(after Gugler and Muhlenberg)
S
Wm
Ws
Sn
Ss
Sm
S = Supply of labour
Ws = Wage providing worker's subsistence minimum
Wm = Wage secdring maximum supply of labour
Sn = Supply for non-economic reasons
Ss = Sn plus supply of those who cannot subsist in rural economy
Sm = Maximum supply

Figure 1.1: The Supply of Migrant Labour from one region

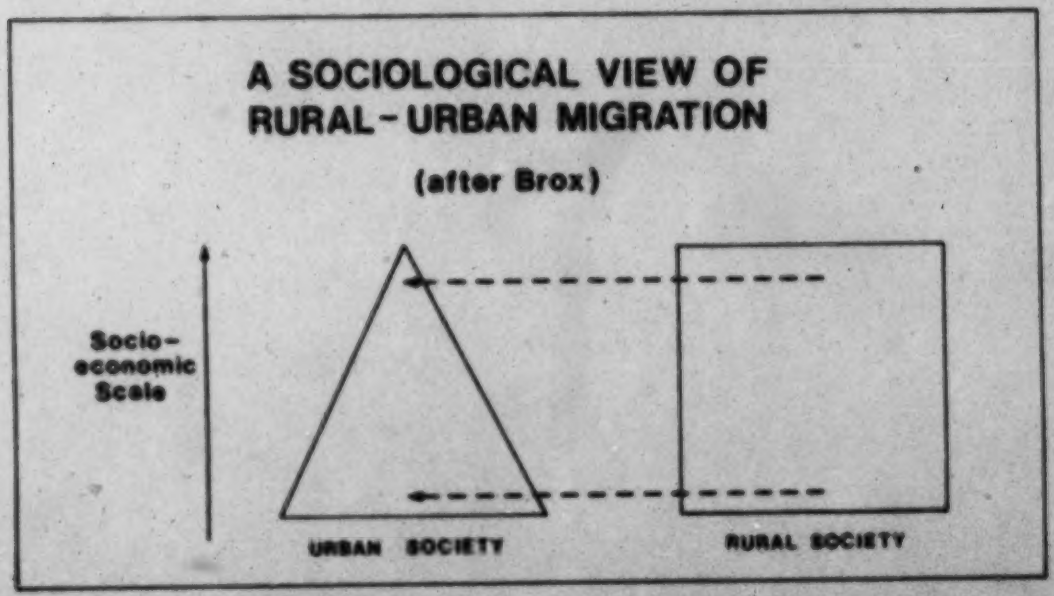

Figure 1.2: A Sociological View of Rural-Urban Migration

volume of stream and counterstream: as migrant workers more readily realise their 'targets', the greater the number of workers pulled into the mobile force, but without commensurate growth in migrational efficiency.

Brox[26] has offered an interesting analysis of the structure of rural depopulation based on his work in both Newfoundland and Norway: though his work is less comprehensive than the analysis of Gugler in its appeal to sources, it is no less well argued. In brief, Brox appeals to both social and political factors: he sees rural depopulation as affecting two groups (Fig. 1.2), those with

> "no or very little property (and those) with better than average possibilities...In other words, migration from the countryside has drained out the 'lowest' and 'highest' social strata...the number of families in each of these categories will depend upon factors such as resources, technology and markets, but also upon the social structure of rural society and upon political decisions that are made outside the local community." 27

Even Brox, however, with his bias towards explanation rooted in social structure, admits that "in the majority of localities...the economic possibilities for the young people are rather few and unattractive".[28] But he emphasises also that ecological and resource considerations must be taken into account:

> "the fact that North Swedish communities based on a combination of subsistence agriculture and forestry are depopulated much more rapidly

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[26] Brox, O., "Urbanization in North Norway: studies towards a general theory of rural depopulation", St. John's, 1966, 5 pp. mimeo.

[27] Ibid., pp. 2-3

[28] Ibid., p. 4

> than North Norwegian communities based on a combination of subsistence agriculture and fishing, can be accounted for by reference to a fundamental difference between trees and cod...Contrary to cod, trees are...owned by somebody and if this isn't the smallholder, he has little influence over when and whether and by which technology they shall be harvested."[29]

Cod however is a common-property resource, and individuals cannot easily be forced out of its exploitation by third parties. This fact is obviously of importance in an understanding of rural depopulation in Newfoundland.

It was a starting point of Brox's analysis that the "available literature on rural depopulation and urbanization generally suffers from a 'positivistic' approach (gravity models)...".[30] His particular reference was to limitations he had encountered in sociological research, but there is no doubt that the criticism applies equally to much work of specifically geographical inspiration in the field of migration.

This is not to say however that geographers have not completed work of great value on migration. In Scandinavia for example, numerous substantial studies have been made on the spatial structure of migration: the work

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[29] Loc. cit.

[30] Ibid., p. 1.

of Ajo,[31] Olsson,[32] Wendel,[33] Kulldorf,[34] Mørch,[35] Gerger,[36] Naukkarinen,[37] and Hansen[38] is testimony to the important contributions made from all four Scandinavian nations. Undoubtedly however, the most seminal of studies have been developed in Sweden under the influence of Hägerstrand.

Hägerstrand's most important work on migration was produced in 1957[39] and although the subsequent period has seen great technical and methodological advances, his original findings and the cautionary notes he expressed are still valid. The main thrust of Hägerstrand's work was towards the empirical investigation and theoretical understanding of the "migration field" or the "geographical distribution of migrants as seen from the parish or commune under

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[31] For example Ajo, R., "New Aspects of Geographic and Social Patterns of Net Migration Rate. A Pilot Study based on Finnish Statistics for the Year 1951", in Hannerberg, D. et al. (eds.), op. cit., pp. 170-183.

[32] Olsson, G., "Distance and Human Interaction: a Migration Study", Geografiska Annaler, Vol. 47B, 1965, pp. 3-43.

[33] Wendel, B., A Migration Schema: Theories and Observations, Lund, 1953.

[34] Kulldorf, G., Migration Probabilities, Lund, 1955.

[35] Mørch, A.H., "Fødesteds - og indflytningsfeltet for Grindsted by 1964", Geografisk Tidsskrift, Vol. 47, 1968, pp. 19-49.

[36] Gerger, T., "Vastervik: a Migration Study", Geografiska Annaler, Vol. 48B, 1966, pp. 78-111.

[37] Naukkarinen, A., "Population Development in Northern Finland", Nordia, No. 8, 1969, 144 pp.

[38] Hansen, J.C., "Regional Disparities in Norway with reference to Marginality", Paper presented to the Institute of British Geographers, Annual Meeting, January 1972, 20 pp. mimeo.

[39] Hägerstrand, T., "Migration and Area: Survey of a sample of Swedish Migration Fields and Hypothetical Considerations on their Genesis", in Hannerberg, D. et al (eds.), op. cit., pp. 28-158.

investigation".[40] The migration field (see also Appendix 4) for any particular location is at least prima facie related to distance:

> "we find a fairly regular decrease in the frequency of the relative migrations as the distance increases (and) the migration field ...dissolves into an archipelago of relatively dispersed contacts."[41]

One of the most striking features of the migration field is its stability. Hagerstrand quotes the work of Dahl to the effect that the "migration field...preserved certain fundamental patterns in its inner parts but...at the same time it greatly expanded all over the country".[42] Thus the morphology of the migration field was stable but the range of the field extended over time.

More debatable is the thesis advanced by Hagerstrand on the relationship between the volume and composition of migration and the type of destination. In essence, Hagerstrand holds that the one is 'intrinsically independent of the other and that "it seems reasonable to study the spatial structure of migration fields as a separate question in population geography leaving out the set of factors which govern the many other 'migration differentials'".[43] This assumption in its pure form is hard to accept: if, as Lee has pointed out, the volume and provenance of migration streams are a function of the balance of perceived opportunities at both

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[40] Ibid., p. 29.
[41] Ibid., p. 30.
[42] Ibid., p. 78-9.
[43] Ibid., p. 111-12.

origin and destination, it seems unreasonable to accept that differences in the level of these opportunities at destination will not affect the migration field. In fact, as Hägerstrand goes on to explain, such a view is a necessary "simplification" in the "long series of studies exclusively devoted to the question of 'migration and distance'".[44]

Hägerstrand devotes considerable attention to this latter topic in an attempt to rationalise the numerous attempts made to fit observed migration data to the 'distance' law of Ravenstein. Though he discerns some merit in the exponent values used to describe the strength of migration fields, he questions the universality and the bases of many of the statistical models advanced to account for the relationship between migration and distance:

> "In the long run direct physical analogies are hardly the best starting point for forming theories regarding either migrations or social processes in general. It is undeniably far more sound to start from such basic assumptions as more obviously agree with our actual knowledge of society."[45]

His most judicious assessment however is reserved for the end of his appraisal of previous models:

> "If we sum up what has emerged from these hypotheses...we are left with the impression that each formula, which in some way makes the frequency of migration directly proportionate to the population and at the same time introduces a reverse proportion to distance, is somehow able to be brought into line wi h actual observations. The differences...are insignificant. Yet the ultimately convincing conformity

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[44] Ibid., p. 112.

[45] Ibid., p. 119.

is missing."[46]

A particular criticism of postivistic or deterministic models is that they assume an independence on the part of the potential migrant which is, in fact, illusory: "he appears to be living like a Crusoe and not as a member of society, the first combining force of which is a ceaseless flow of spoken words".[47] In practice the level of social interaction and information is more important than "external conditions" such as a "monotonically" derived distance:

> "even if the migration frequency - as is commonly the fact - decreases with increasing distance, the explanation is not necessarily a deterministic quality of distance as such".[48]

A substantial theoretical advance on Hagerstrand's concept of the migration field was contemporaneously suggested by Ajo[49] who tentatively pointed to what have since been called "migration regions". Ajo essentially attempted to define areas or 'regions' characterised by particular forms of social interaction, and asked "why not call these regions population basins", explaining that these basins "point out the areas wherein the most of the internal migration takes place".[50]

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[46] Ibid., p. 126: the italics are those of the present author.

[47] Ibid., p. 131.

[48] Ibid., p. 148.

[49] Ajo, R., op. cit.

[50] Ibid., p. 183.

Ajo's researches were richly suggestive rather than definitive. He himself was well aware of the limitations of his methodology and warned, rather prettily, that "certainly over much enthusiasm is to be avoided".[51] Even so, it is surprising that his work has not been directly followed up: perhaps the semantic and syntactic cloudiness of his presentation has inhibited a clear understanding of the problems he was attempting to solve and the ways he was approaching them.

The notion of migration regions was not lost however. More recently two students of migration, Hollingsworth and Ng, independently (in fact in ignorance of each other's work) sought systems of migration regions for Scotland. Seemingly without attribution to Ajo, each attempted to establish a system of regions, in which each region is a "closely-knit" entity. Between the regions "there is relatively little migration but within (each region) internal migration is high".[52] In other words, the definition requires that intra-regional circulation should dominate inter-regional migration. Both Ng and Hollingsworth found that they could suggest a regional subdivision of Scotland possessing these attributes.

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[51] Loc. cit.

[52] Hollingsworth, T.H., Migration: A Study based on Scottish Experience between 1939 and 1964, Glasgow, 1970, p. 73.

See also Ng, R., "Internal Migration Regions in Scotland", Geografiska Annaler, Vol. 52B, 1969, pp. 139-147.

More important for the moment than the methodology by which these results were attained is the significance attributed to the putative migration regions. The point is worth making because both Hollingsworth and Ng exhibit modest degrees of euphoria in their claims for the possibilities opened up by the discovery of migration regions. Hollingsworth suggests that migration regions may be used to define more realistic and functional administrative units than exist, for example, in the archaic divisions bequeathed by history. Ng's analysis of the significance of migration regions is more ambitious: he suggests that all regional economic development and in particular, the location of 'growth points' should conform to patterns suggested by migration regions -- "the best results can only be obtained by benefiting from the existing internal movement pattern instead of striving to obliterate it by attempting to dismantle the psychological barriers".[53] If indeed migration regions can be thus delimited, they would appear to be a potent tool of applied geographical analysis.

There have been thus numerous attempts to understand, measure and explain the phenomenon of migration -- in general, the attempts have revealed the biased intellectual persuasion of their originators. So economists have emphasised the dominance of economic causation; sociologists have pointed to social structure, function and dysfunction;

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[53] Ng, R., op. cit., p. 147.

and geographers have tended to look to space, location and distance as primary explanatory variables. It has been and remains a fundamental problem however to distinguish between the variables which are descriptive of the migration syndrome and those which adequately explain it.

One dimension of migration, the theoretical implications of which have gone largely undeveloped, has been the role of time. This is not to say that students of population have been unaware of the significance of time in the evolution of migration systems: Ravenstein, for example, implicitly inserted time into his 'laws';[54] Ackerman,[55] Trewartha[56] and Hooson[57] also testify to the importance of time: and the work of Hägerstrand invokes time in the manner so explicitly required by the Swedish sociologist Hanssen:

> "in order to discover the important social trends, we have to dive under the surface of the present. The main changes during the last fifty years consequently should be included in our research model as indispensable for a good knowledge of the present situation".[58]

But although the evolution of migrational phenomena through time has been explicitly studied in, for example, Hägerstrand's work, his thrust remains one of a spatial orientation. At a different level, the suggestion of Ng that

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[54] See for example the discussion in Lee, E., op. cit., p. 182.

[55] Ackerman, E.A., "Geography and Demography" in Hauser P.M. and Duncan, O.D. (eds.), The Study of Population, Chicago, 1959, p. 727.

[56] Trewartha, T.T., op.cit., p. 90.

[57] Hooson, D.J.M., op. cit., p. 14.

[58] Hanssen, B., "The Holistic Approach", in Hannerberg, D. et al. (eds.), op. cit., p. 336.

migration regions may be "immutable" is offered as a fond hope to be verified or not by the examination of later censuses i.e. additional temporal data.[59] The essential point is that although a good deal of lip service has been paid to the significance of time as a potent element in the explanation of migration, geographers generally have fought shy of giving it a consideration co-equal with that given to space in the development of migration theory.

This omission has been partially rectified by Zelinsky in a powerful and sweeping statement in which he advances his hypothesis of what he calls the "mobility transition".[60] In essence the hypothesis attempts to comprehend migration as an expression in both space and time described by the useful if unlovely term, a 'spatiotemporal' process. The gist of the hypothesis is contained in the statement that

> "There are definite patterned regularities in the growth of personal mobility through space-time during recent history, and these regularities comprise an essential component of the modernization process."[61]

The notion of the mobility transition is borrowed from the more celebrated concept of the "demographic transition", and, of course, is interdependent with it. For

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[59] Ng, R., op. cit., p. 147.

[60] Zelinsky, W., "The Hypothesis of the Mobility Transition", Geographical Review, Vol. 61, 1971, pp. 219-49.

[61] Ibid., pp. 221-22.

example, just as in the demographic transition, the population development of nations and areas passes from a premodern near-equilibrium to a modern near-equilibrium by changes in the schedules of fertility and mortality, so the schedules of mobility (i.e. migration and circulation) shift also. Most important the progression of the mobility transition is said to be "irreversible".[62]

Zelinsky postulates five phases of territorial mobility. Phase I, nominated "The Premodern Traditional Society" is characterised by "a spatially stable peasant society"[63] such as Japan down to roughly 1920: internal migration is negligible in periods and societies of this type. Phase II ("The Early Transitional Society") is characterised by "a great shaking loose of migrants from the countryside"[64] and their relocation in the cities and rural settlement frontiers of both home and abroad. Phase III ("The Late Transitional Society") is marked by a slackening of rural-urban migration and emigration, with more emphasis being given to 'circulation' as a technologically derived substitute for migration. In Phase IV ("The Advanced Society") traditional forms of migration have all but disappeared and settlement frontiers are in retreat: inter-urban and intra-urban migration dominate the system of movement. In Phase V

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[62] Ibid., p. 249.
[63] Ibid., p. 235.
[64] Ibid., p. 236.

("A Superadvanced Society") the trends of Phase IV are continued, with the possibility of diminution in actual personal mobility as systems of delivery and communication improve, and the further possibility of strict political control on both internal and international movements. Zelinsky's schematic representation of various spatial sectors of mobility is portrayed in Figure 1.3.

Certain generalisations of a spatiotemporal character are adduced by Zelinsky in the course of his analysis. In brief, he suggests that:

1. in Phase I countries, "a rapid massive build up in rural numbers occurred well before any major surge in the mobility rates".[65]

2. the propensity to migrate begins in the more developed socio-economic zones "and then radiate(s) outward into less advanced, less accessible regions".[66]

3. the role of the regional and national metropolis is to function as "the advanced outpost of the modernisation process. Demographic innovations "flow outward" from the city to the "traditional (Phase I) countryside".[67]

4. the growth through time of "non-economic motivations" for circulation and mobility.

It is not necessary to treat exhaustively Zelinsky's hypothesis in this work: rather we should be concerned with the significance of his work for population geography, and in particular the study of migration.

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[65] Loc. cit.

[66] Ibid., p. 238.

[67] Ibid., p. 243.

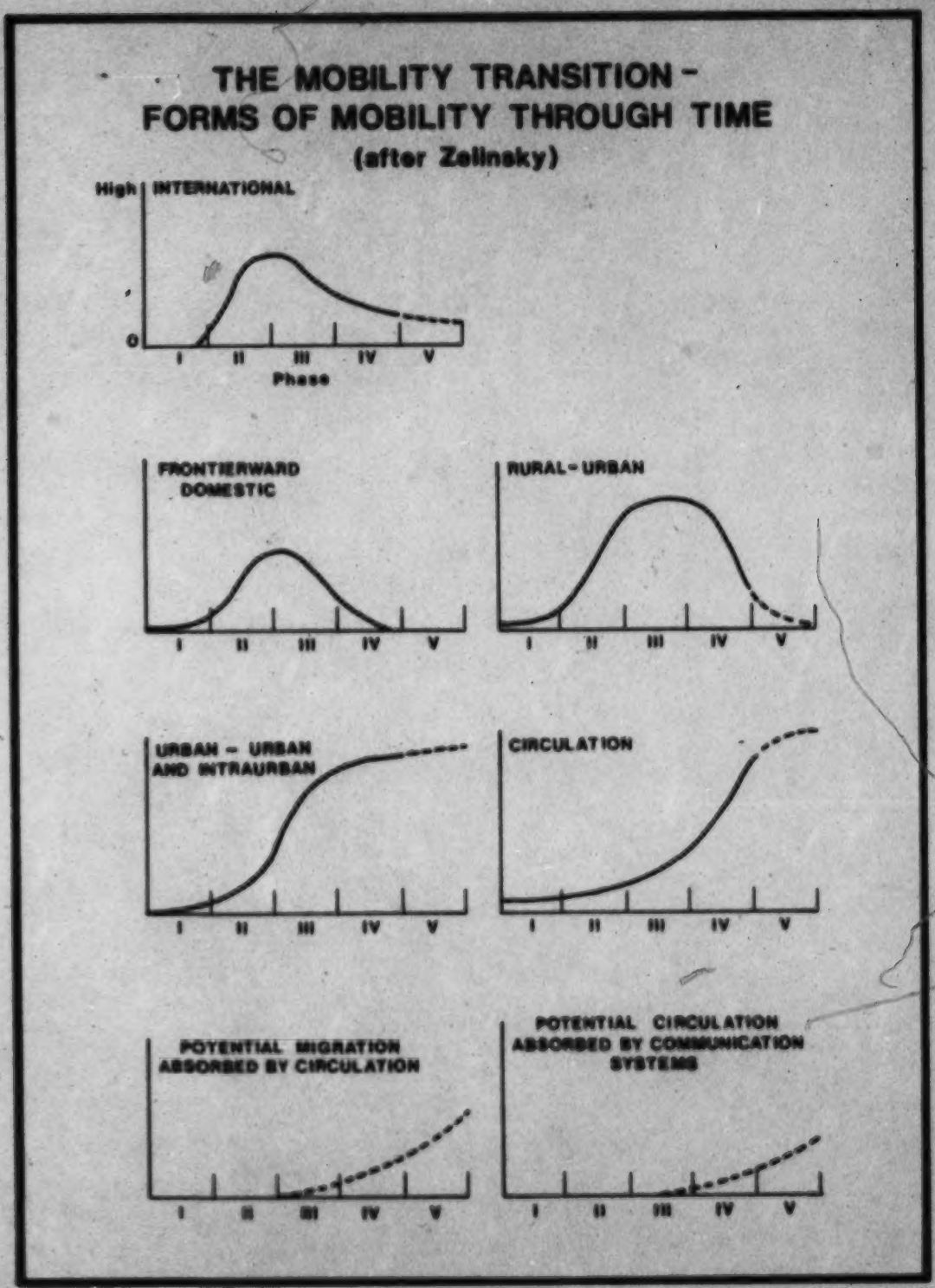

Figure 1,3/ The Mobility Transition - Forms of mobility through time

It is readily apparent that if Zelinsky's hypothesis is substantially verified, then he has provided a grand design or scheme of ultimate causation, to which all other 'explanations' will be subsidiary, rather like minor deviations on a regularly sloping surface. His work has the merit of avoiding disciplinary partiality and, being cast in an intellectually neutral spatio-temporal mould, can accommodate locational, cultural, economic and political diversity within a single conceptual framework.

This is not to say that Zelinsky's analysis must go unchallenged. As he himself points out, the scale at which it is conceived may diminish the utility of the hypothesis in many applications:

> "As in all geographical discourse, the question of scale is crucial. The mobility transition is intended as a highly idealized, flexible scheme that affords a general overview of a variety of places and periods. It is aloof from "accidents" or exceptional circumstances; it is of little help in describing or predicting specific patterns of migration or circulation for a particular small area of set of areas over a brief period; it is deliberately vague in indicated distances, elapsed time, and rates. But if geography and history are viewed in extremely soft focus through the lens of the hypothesis, it may have value in whatever broader insights are forthcoming".[68]

There is also, despite the enthusiastic sweep of Zelinsky's assault, a potential chink in his armour. He notes that the demographic transition is mistakenly dubbed: there is no single demographic transition, but rather a

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[68] Ibid., p. 229.

miscellany of demographic processes which may differ widely.[69] It may be however that there are also a number of mobility transitions which differ so widely that a collective designation becomes conceptually misleading. In extension of this, it may be argued that the hypothesis of a vital or demographic transition was developed largely against the experience of the Euro-American industralised nations. It has more recently been recognised that perhaps this experience, and the hypothesis, do not adequately explain contemporary processes in the developing countries. The same may turn out to be true for the hypothesis of the mobility transition.

All this however is speculation. For the moment. Zelinsky has provided us with a working hypothesis for migration which is comprehensive and stimulating. It firmly anchors the phenomenon of migration in the context of cultural, physical and temporal reality; because it is broadly conceived it permits the exercise of spatial/geographic influences without denying force to the other equally essential influences. It is the most complete hypothesis yet provided, though its newness means that it has not yet been subject to sustained scrutiny and testing.[70]

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[69] Ibid, p. 227.

[70] A most lucid recent work however, though it antedates Zelinsky's published hypothesis, is clearly heavily dependent on Zelinsky's philosophy. See Riddell, J.B., The Spatial Dynamics of Modernization in Sierra Leone, Evanston, 1970. This was first presented as a thesis in Zelinsky's department.

Summary

The attempts of scholars in varying disciplines to understand the phenomenon of migration have yielded a rich if selective conceptual baggage with which the later student must try to come to terms. Many of the concepts developed are derived directly from the concerns and interests of geography -- the migration field, the migration region and the mobility transition are prime examples of this. Many other concepts can without difficulty, be translated into geographical methodology -- stream and counter-stream and migrational efficiency for example can be analysed to affirm or deny the potency of the more purely geographical concepts.

The above considerations comprehend those areas of migration study which are crudely measurable and which are susceptible to statistical and cartographic analysis. Migration however, is not solely or even largely a question of numbers: the numbers give only an incomplete picture of some of the mechanisms involved and of other mechanisms they say nothing at all. For this reason, it is as well to incorporate some non-measurable concepts into the analysis and to look for their geographic expression. An example of this type of incorporation is that relating to the rural-urban interdependence described from Gugler, which has obvious geographic implications. Concepts of this nature have the merit of softening and filling in the hard outlines suggested by statistical analysis.

CHAPTER II

THE PEOPLING OF NEWFOUNDLAND 1836-1935

It is one of the peculiarities of Newfoundland that, by comparison with most other areas within Canada, its population is remarkable for its homogeneity of ethnic origin, and its paucity of recent immigrants. In addition, it should be emphasised that for much of Newfoundland's history population growth has occurred against the background of a sluggish subsistence economy in which conventional New World notions of commercial enterprise and profit have been, for the majority of the population, conspicuously absent. For these reasons, the growth and distribution of population since 1836 have been largely an internal matter and have proceeded uncomplicated by violent external stimuli or inducements of more than a local appeal. This being the case, Newfoundland's contemporary population geography is, to a greater degree than is usual in Canada, a prisoner of its own past. Thus, by outlining the earlier development of the spatial structures and processes which help to account for the population geography of Newfoundland, this analysis should be of material assistance in the understanding of contemporary dynamics.

The Scale and Significance of Immigration

It is perhaps unfortunate that a substantial influx of migrants to Newfoundland took place before the keeping of the official records on which this account is largely based. English and Irish fishermen had been visiting and sporadically settling the island for over two hundred years when, around the beginning of the 19th century, renewed and concentrated incursions took place. The United Irish rebellion of 1798, and the consequent upheavals in Ireland, prompted many Irishmen to emigrate to the land with which their contacts were of such long standing. Similarly, high fish prices arising from the English monopoly on European markets during the Napoleonic Wars boosted wages and this too induced even greater numbers to emigrate: "in 1814 seven thousand arrived, and in the following year...there came four thousand more".[1] Thus it was largely through the medium of immigration that the population rose steeply in the first few decades of the 19th century -- in 1804 the resident population was computed at 20,380, but by 1827 this figure had risen to 59,571, an uncompounded increase of more than 8% per year.

Most of the attention given to immigration by contemporary observers was directed at the Irish, largely because the Irish inflow was more concentrated in both time

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[1] Hatton, J. and Harvey, J.M., Newfoundland: its history, its present condition and its prospects in the future, New York, 1883, p. 78.

and space: in addition, the Irish were suspect as being a potentially dissident sector of the population and their growth in numbers was observed with care, not unmixed with alarm, by the authorities. This literary and official emphasis should not however obscure the fact that immigration from England, though less concentrated, was still an equally important element in the peopling of the Colony. This becomes clear from the data in Table 2.1 on the proportion of foreign-born in the Colony: if the massive surplus of Irish-born in St. John's is ignored, the rest of the Colony had roughly equal numbers of English-born and Irish-born immigrants. The Irish elements and their descendants dominated the Avalon, while the English held the Northern Bays, the French Shore and the South Coast.

The startling rates of increase were not however long sustained as immigration dwindled in the face of a fluctuating economy after the Napoleonic Wars. This fact, together with interesting sidelights on the scale and mode of immigration to which Newfoundland was subject, is seen in an exchange of correspondence which took place in 1857-58 between the authorities in Newfoundland and the Colonial Office in London. The governor of the day, Sir Alexander Bannerman, opened the official exchange by stating:

> "...It appears that since the year 1847, emigration from Ireland to Newfoundland has declined rapidly and is now nearly extinct, the cause of which is want of employment, and the inhabitants writing to their friends that many of them were in a state of extreme destitution; this was perfectly correct; but from one or two

TABLE 2.1: NEWFOUNDLAND -- NATIVE-BORN AND FOREIGN-BORN (MAJOR GROUPS) AS PERCENTAGE OF TOTAL POPULATION, BY DISTRICTS* 1857 AND 1869.

District	1857 Population	1857 Born in: Newfoundland	England	Ireland	1869 Population	1869 Born in: Newfoundland	England	Ireland
St. John's E.	17,352	79.7	3.9	13.9	17,204	93.1	2.3	8.5
St. John's W.	13,124	79.2	3.3	16.1	11,646	87.4	1.9	9.8
Harbour Main	5,386	94.0	0.8	5.0	6,542	96.8	0.5	2.6
Port de Grave	6,489	91.2	1.9	3.6	7,536	96.2	1.2	2.0
Harbour Grace	10,067	93.0	1.3	5.1	12,740	96.4	0.7	2.1
Carbonear	5,233	90.6	1.7	7.6	5,633	94.2	1.0	4.4
Bay de Verde	6,221	97.4	1.2	1.3	7,057	98.6	0.6	0.8
Trinity Bay	10,736	97.2	1.8	0.9	13,817	98.3	1.2	0.4
Bonavista Bay	8,850	95.7	2.5	1.6	11,560	98.0	1.0	0.8
Fogo and Twillingate	9,717	93.8	4.8	1.1	13,067	95.7	3.2	0.8
French Shore	3,334		(no data)		5,387	89.4	1.8	0.5
Burgeo-LaPoile	3,545	89.4	7.9	0.1	5,119	91.6	6.8	0.1
Fortune Bay	3,493	89.8	7.7	0.3	5,233	93.6	5.2	0.2
Burin	5,529	90.2	6.1	3.0	6,731	95.0	3.0	1.3
Placentia and St. Mary's	8,334	92.6	1.5	5.7	8,794	95.8	0.7	3.3
Ferryland	5,228	91.8	1.3	6.8	5,991	96.1	0.5	3.3
Newfoundland	107,339	90.0	2.9	6.2	144,057	94.2	1.8	3.0

Source: Newfoundland Census 1857 and 1869: General Recapitulation; author's own calculations.

* for explanation of the term 'districts' see Appendix 5 and Endpiece

> successful fisheries things have taken a very different turn; the want of labour, and the high price of wages, are now severely felt. The Board of Works here, and several respectable firms, have been obliged to authorise Messrs. James and Robert Kent of the City of Waterford, and Mr. John Shea, of the City of Cork, to procure a number of labourers for Newfoundland; but which, they say, cannot be effected unless H.M. Government will allow some relaxations of the Passenger Act, which are pointed out in the enclosed Minute..." [2]

The Governor's request was prompted, and given point, by the concern of local merchants who could see in the recently passed Passenger Acts obstacles to the supply of Old Country immigrants which they, and by extension the Colony, so badly needed. In essence, the Passenger Acts, by raising the fixed costs incurred in shipping emigrants, made economies of scale all the more necessary in the passenger-carrying trade. This could not fail to discriminate against the interests of Newfoundland because her need for labour was small in total when compared to her more populous neighbours. Thus, the local pressure groups complained:

> "The provisions of the present Act...have had the effect of diverting the stream of Emigration from the smaller British North American colonies to the United States and Canada..."[3]

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[2] Letter from Sir A. Bannerman, Governor, to the Right Hon. H. Labouchere M.P., Secretary of State for the Colonies, dated 8th December 1857 in Journals of the House of Assembly, 1858, pp. 604-604.

[3] Minutes of the Legislative Council, meeting held 8th December 1857 in J.H.A., 1858, pp. 607-08.

The submission however met with a cool reception from the Colonial Office and the reply of the Secretary for the Colonies is instructive both in its analysis of the real reasons emigration to Newfoundland had dwindled, and in the raw data on emigration he advanced to support his case:

> "...The question moreover arises, whether there is any reason why Her Majesty's Government should stimulate Emigration to Newfoundland by exceptional arrangements. I annex a statement of the Emigration to the Island in the sixteen years ending in December 1856. It will be seen that in the six years preceding 1847, the Emigration averages 516 a year, while in the nine years following, it averaged only 197; - but the variations in the numbers appear to show that the falling off is rightly attributed by you to a failure of the demand for labour, and not to an increase in the cost of passage...you state that 'from one or two successful fisheries' the Island has now become prosperous; but you add afterwards that 'fisheries are precarious, and two or three bad seasons might bring along with them the same want of labour and its consequences which took place some years ago'. Under such circumstances it would not be desirable that Her Majesty's Government should interfere to give an unusual impulse to Emigration to Newfoundland, since they would thereby make themselves, to a certain extent, responsible for the employment of those who might proceed thither...
>
> (annexed Return of Emigration from Britain to Newfoundland)

1841	336	1849	87
1842	490	1850	345
1843	448	1851	241
1844	684	1852	209
1845	618	1853	173
1846	523	1854	95
1847	993	1855	94
1848	343	1856	215" [4]

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[4] Letter from H. Labouchere, Secretary of State for the Colonies to Sir A. Bannerman, Governor, dated 28th January 1858 in J.H.A., 1858, pp. 605-07.

Thus the scale of, and scope for, immigration was diminished both by economic fluctuations and by official reluctance to promote more favourable conditions for emigrants.[5] A trickle of emigrants did continue to arrive, but these were insufficient in number to form a significant element in population growth. However, such evidence as we have of the niches occupied by the few arrivals demonstrates a fundamental theme in the peopling of Newfoundland and the difficulties under which its promoters laboured. In the summer of 1858, Mr. James Kent of Waterford, cited previously in the correspondence between Bannerman and Labouchere, wrote to St. John's:

> "...in obedience to your wish...I engaged in the Spring of this year, the brig Nancy, for the conveyance of emigrants from this port to St. John's...She could only carry, legally, seventy-five passengers, and with that number the Nancy sailed...on or about the 21st April. Many of the seventy-five passengers were labourers, shipped or bound for two summers and one winter to parties in St. John's... Nevertheless, I deeply regret to learn from my brother...that nearly all these shipped men, immediately on arrival at St. John's, deserted or ran away..."[6]

More precise and independent evidence of the dwindling immigrant stock is furnished by the early censuses.

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[5]It is interesting that something of this attitude has been inherited by Labouchere's successors. There are numerous contemporary cases in which professional people emigrating to positions in Newfoundland have been exposed to the mirth, scepticism, and sometimes thinly veiled opposition of Canadian officials in the Immigration Offices in Britain.

[6]Letter from Mr. James Kent of Waterford...to John Kent, Colonial Secretary etc. St. John's dated 21st June 1858 in J.H.A., 1859, pp. 441-42.

Table 2.1 indicates how in each district of the colony the proportion of non-native born diminished over the early years of the official record.

In addition to the diminishing proportions of non-native inhabitants, the actual numbers of foreign-born fell -- the foreign population was not, in effect, being replaced or supplemented by renewed immigration. Only in two areas was there an exception to this rule: on the South Coast in Burgeo-LaPoile and Fortune Bay, the actual numbers of both English and Irish-born either rose or remained steady. However, this is not too surprising for this area was undergoing the most dynamic population growth of the whole colony in this period (1857-69) and was experiencing heavy in-migration together with a pronounced natural increase. Thus, though stability in the stock of foreign-born obtained in these districts, the actual increase in the numbers of foreign-born was negligible in the case of the Irish, and slight in the case of the English.

A second exception, not noted by the Table 2.1, existed on the French Shore in what later became the District of St. George's. Here, in 1869, there lived a significant minority group of neither direct English or Irish antecedents. This group was comprised largely of settlers who had recently left Cape Breton and Prince Edward Island to avoid the iniquities of the taxation which would surely follow the founding of the Confederation of Canada. To their number, mostly Scottish and Acadian, could be added a smaller

number of 'Foreign Born', mostly deserters from French fishing ships. Together, these peoples comprised 8.3% of the population of the French Shore. Though in itself a small proportion of the total population on the shore, this mixed group was settled close together in the most agriculturally productive portion of the colony. Perhaps by reason of their remoteness, and their distinctiveness in origin and economy, they imparted a persistently different scale of population dynamics to this corner of Newfoundland.

The diminution of immigration then, after the first third of the 19th century, can scarcely be questioned, and in any calculation of the dynamics of population growth, immigration appears negligible. As one near contemporary observer remarked:

> "the increase of population has arisen almost entirely from natural growth, as since 1814 the amount of immigration has been insignificant. The fisheries were barely sufficient to sustain the existing settlers and latterly have failed to expand so as to meet the wants of a rapidly growing population..."[7]

Nineteenth century Newfoundlanders were nothing if not optimistic, and the writers went on to note that the development of the island's resources was as yet (1883) only beginning. Mines, forests and agriculture were on the verge of being opened up, mainly by the incipient building of the railroad on which great hopes were pinned:

"we may now fairly expect that ere long a

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[7] Hatton and Harvey op. cit., p. 365.

> stream of thrifty immigrants will pour into the colony, and turn the fine natural resources to industrious account."[8]

Cognisant of the great trans-Atlantic migrations that were even then reaching their peak, the writers were confident that when

> "(the island's) attractions are thoroughly known, it can hardly fail to secure a considerable rill from the great stream of emigration now flowing from the Old World to the New."[9]

But Newfoundland's attractions for the late 19th century emigrant were either too little, or they came too late, to compete with the more publicised virtues of Canada and particularly the United States. The trans-Atlantic stream passed by unbroken, and despite the optimism of Newfoundland's enthusiastic promoters, no significant rill came her way.

The Growth of Population

For all that Newfoundland's population was essentially and increasingly home grown, it was, at least in the earlier phases, a healthily growing population. Table 2.2 indicates the average annual population changes from 1836-1935 computed on the basis of inter-censal periods. The data from this table have, in addition been incorporated into the accompanying maps (Figures 2.1 to 2.3) which attempt

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[8] Hatton and Harvey loc. cit., p. 365.

[9] Hatton and Harvey ibid., p. 322.

TABLE 2.2: AVERAGE ANNUAL PERCENTAGE POPULATION INCREASE/DECREASE, NEWFOUNDLAND AND DISTRICTS 1836-1935.

District	1836-57	1857-69	1869-74	1874-84	1884-91	1891-01	1901-11	1911-21	1921-35
St. John's E.	2.9	-0.1	0.7	2.5	-0.9	2.3	-0.2	1.3	0.8
St. John's W.		-0.9	1.9	2.5	-0.6	2.1	1.1	1.6	1.4
Harbour Main		1.8	1.9	2.5	0.4	0.3	-0.1	-0.2	0.7
Port de Grave		1.3	1.0	1.0	-1.2	-0.7	-0.6	-0.6	-0.9
Harbour Grace	2.1	2.2	0.5	1.3	-0.8	-0.9	0.6	-0.4	-0.6
Carbonear		0.6	-0.5	1.3	-1.0	-1.3	0.2	-0.6	-0.9
Bay de Verde		1.1	1.1	1.3	2.2	0.1	0.4	0.4	
Trinity Bay	4.0	2.4	2.7	2.1	-0.1	1.0	0.5	0.8	0.1
Bonavista Bay	3.4	2.6	2.5	2.7	1.2	1.5	1.1	0.8	0.2
Fogo	4.7	2.9	3.2	3.4	2.2	1.3	0.9	1.1	0.3
Twillingate						1.6	1.7	1.6	0.2*
St. Barbe	?	5.1	12.1	3.8	1.6	2.2	2.9	1.6	1.3**
St. George's						3.7	3.0	1.4	0.8
Burgeo-LaPoile	6.0	3.7	-0.1	2.8	-0.2	0.8	1.1	1.1	0.5
Fortune Bay		4.2	2.1	2.0	1.6	1.4	1.4	1.3	0.5
Burin	3.4	1.8	2.3	1.1	0.9	1.5	1.2	0.8	0.3
Placentia and St. Mary's	3.7	0.5	2.4	2.0	1.2	2.4	0.1	0.2	-0.1
Ferryland	0.1	1.2	1.4	0.1	-1.4	-0.3	0.2	0.4	-0.7
Newfoundland	3.1	1.5	2.1	2.1	0.4	1.0	1.0	0.9	0.7

* Excluding new districts carved out of Twillingate: Grand Falls 4.0; Green Bay -0.1.

** Excluding new districts carved out of St. Barbe: White Bay 2.4; Humber 1.7.

Source: Newfoundland Census 1836-1935; author's own calculations.

to depict the spatial distribution of components of the population geography over the period.

From 1836-57 (Figure 2.1) growth was rapid in nearly all districts. The longer established areas recorded the lowest growth but even in these cases, the advance was substantial -- in both St. John's and the Conception Bay districts, the annual increase was over 2%.[10] It was in the newly developing frontier districts beyond Baccalieu however, that growth was strongest: on both the North East Coast and the South Coast, average annual increases of over 3.5% were common, and in Burgeo-LaPoile, the increase averaged 6% per annum. Only in Perryland was the advance of population negligible. The overall increase for the colony was more than 3.0%: this appears to represent a healthy natural increase and yet allows for the declining trickle of immigration noted previously.

From 1857-69 (Figure 2.1) the rates of increase diminish and in the St. John's districts an actual decrease of population is reported. Again the heaviest advances are made outside the old established centres, on the French Shore, in the West, on the South Coast and on the North East Coast. With a few exceptions, this pattern is repeated through 1869-74 (Figure 2.1) and 1874-84 (Figure 2.2).

The period 1884-91 (Figure 2.2) shows a sharp discontinuity in the pattern of population development. For

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[10] A growth rate of 2% will double a population in 35 years.

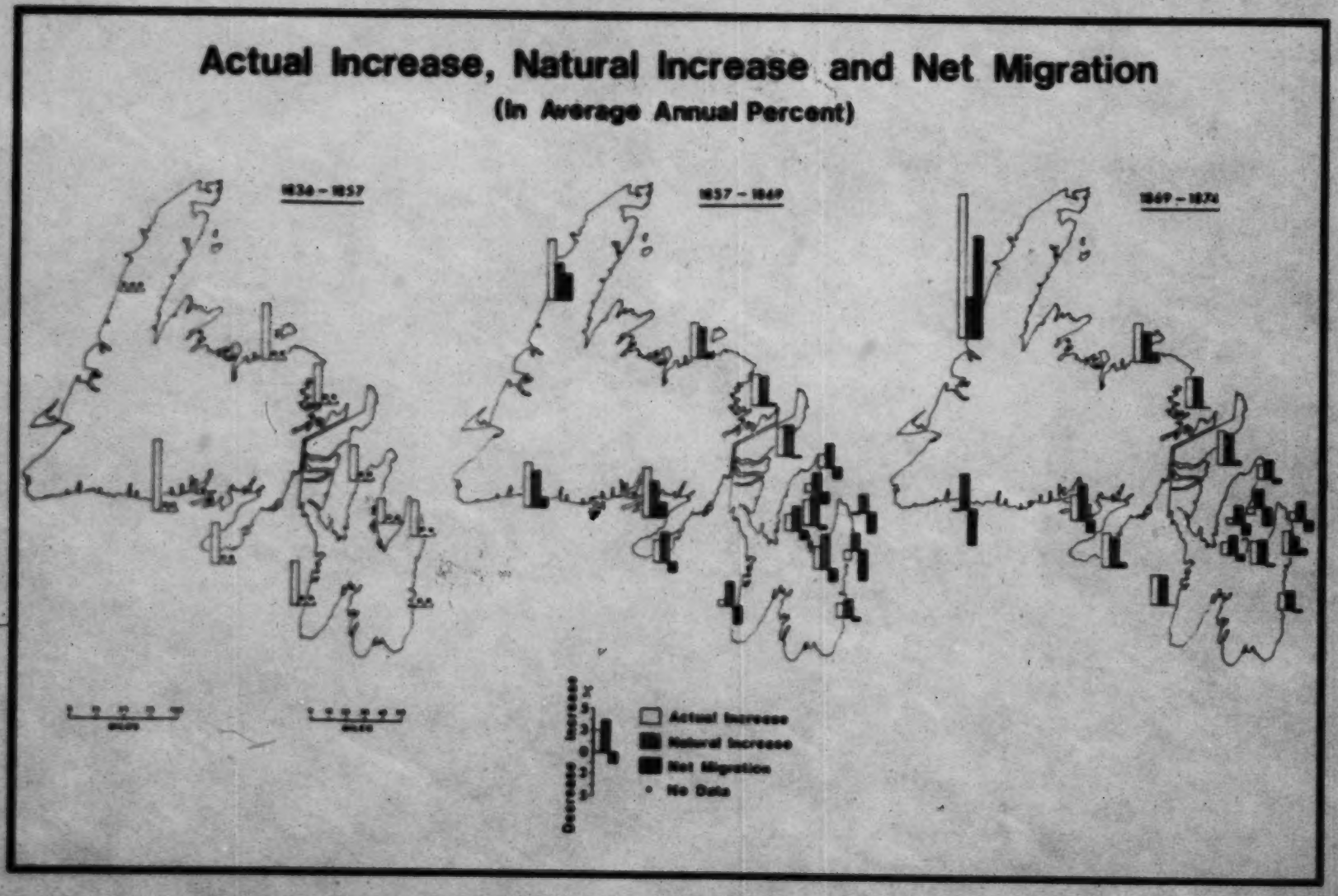

Figure 2.1: Population Growth 1836-57, 1857-69, 1869-74

the first time, total population advanced only very slowly, by an average of less than 0.4% per annum. Naturally the decline was widespread -- in St. John's and the inlying Conception Bay districts actual decrease of population was all but universal, only Harbour Main managing a fractional increase. Beyond Carbonear, increases were usually recorded, but even these were but a fraction of those recorded in previous periods. Ferryland lost population heavily.

The causes of this population stagnation are not far to seek. They were succinctly outlined by Robert Bond, Colonial Secretary, in the Preface to the 1891 Census:

> "It will be noticed that in many of the Districts the increase has been small whilst in a few there has been a decrease. They may be accounted for by the large inducements held out to artisans and labourers in the United States."[11]

Other reasons for the decline will be touched on below[12] but it may be worth noting that the areas of heaviest decline -- St. John's, Ferryland and to a lesser extent the Conception Bay Districts -- were the Catholic strongholds of the Newfoundland Irish. The close links maintained

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[11] Census of Newfoundland, St. John's, 1891, Preface n.p.

[12] It has been suggested that the discontinuity in population growth is due to census error -- either over-enumeration (1884) or under-enumeration (1891). While not impossible, it is improbable that such a large discrepancy would be accounted for solely by such errors which would have required the omission of some 10-15% of the 1891 population. In light of the care devoted to the censuses of this period (see Prefaces for Censuses of 1891, 1901, 1911) and in view of the admitted cause of the decline (emigration), an error of this magnitude is improbable.

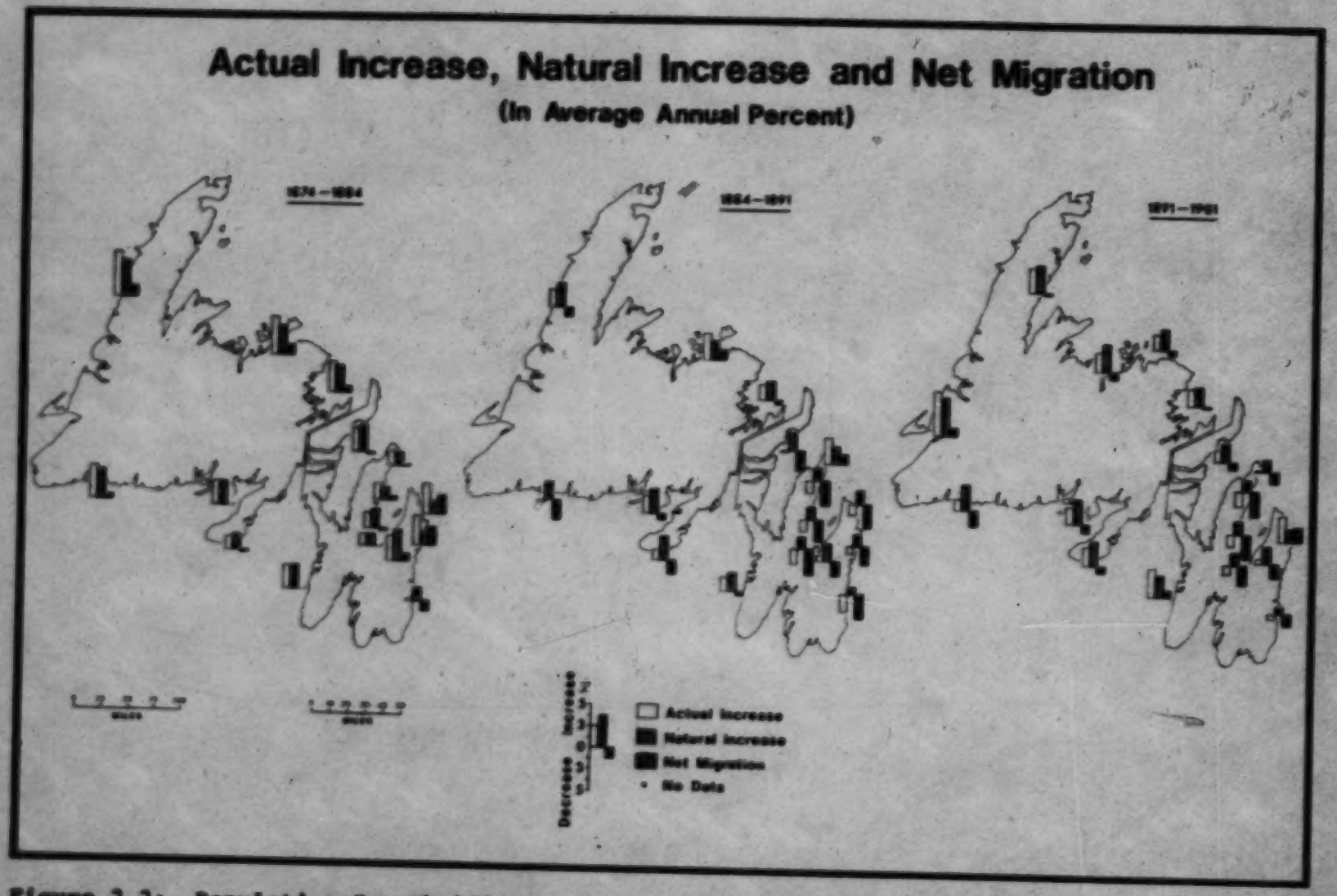

Figure 2.2: Population Growth 1874-84, 1884-91, 1891-1901

by many amongst this group with relatives who had moved to the New England States gave them the information and incentive to migrate further -- from 1884 onwards, this trend becomes pronounced.[13]

The period from 1891-1901 (Figure 2.2) shows a mild resurgence of demographic growth with an average annual increase of approximately 1% for the colony as a whole. Again the West Coast districts, which during this period became almost free of the pernicious French Shore Treaty restrictions, were growing most vigorously, though St. John's had swung back into a phase of strong advance. The North East Coast showed steady if unspectacular growth generally of above 1% per annum, but again Conception Bay and Ferryland were marked by decline. This pattern persisted, with mild variations, throughout the succeeding period (1901-11; Figure 2.3), but from 1911-35 a further diminution in the general rate of increase had set in. Once more Conception Bay and Ferryland declined, and most other advances were extremely modest. The only strong advances were in the newly created districts, based on single industrial and resource enterprises, such as Humber, Grand Falls and White Bay.

Population Parameters

The analysis and description of regional patterns

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[13] This pattern had developed earlier in the 1850's when selective migration had profound long term effects on the political ascendancy in the colony. See Noel, S.J., Politics in Newfoundland, Toronto, 1971, p. 22.

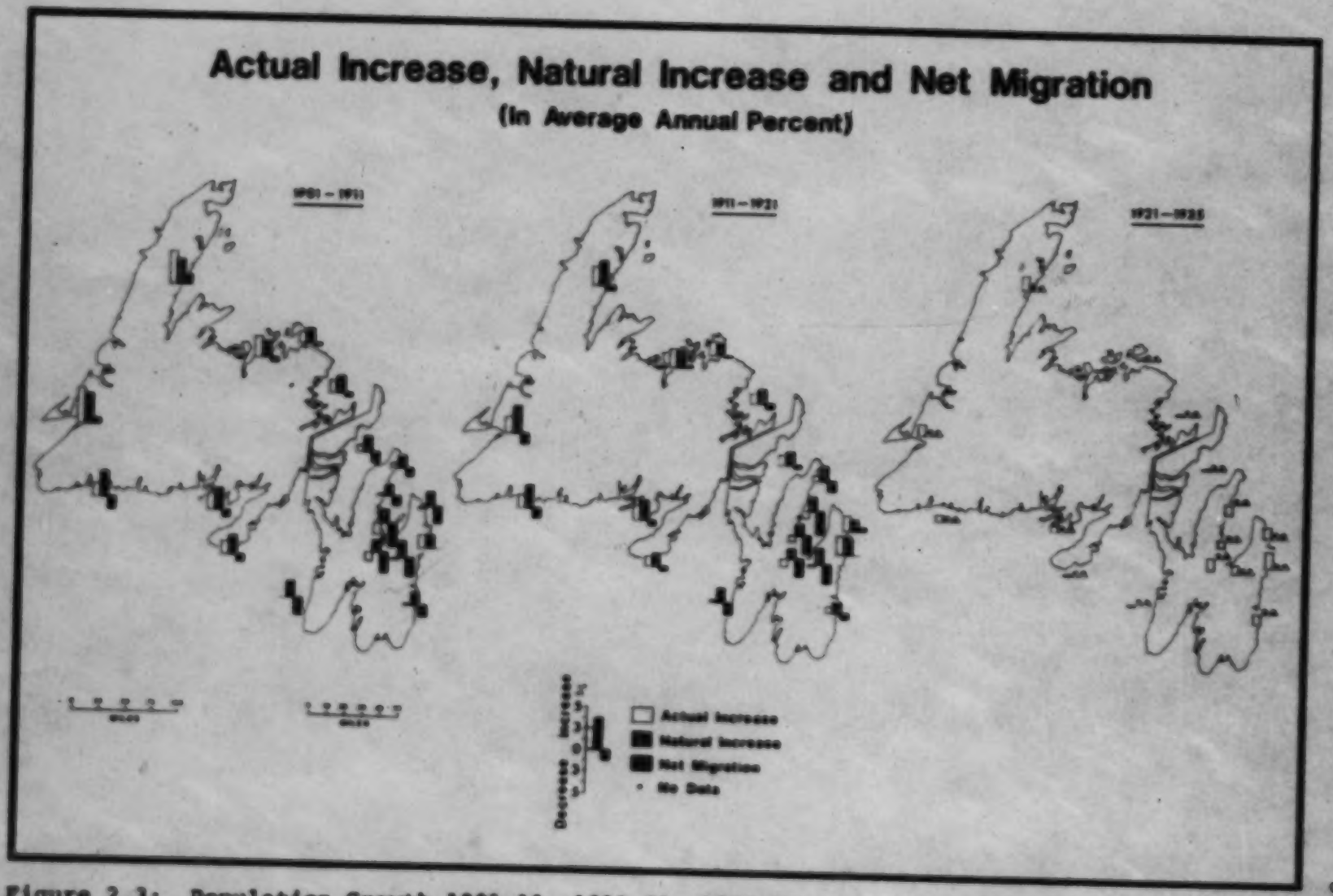

Figure 2.3: Population Growth 1901-11, 1911-21, 1921-35

of growth and decline does not itself tell us much about population structure and dynamics. Thus, for example, a 1% average annual increase in Carbonear may be similar to the figure for Burgeo-LaPoile, and yet the two districts are unlikely to have experienced the same complex of demographic processes. To introduce more precision into the analysis of the processes developing in Newfoundland's population geography, several population parameters have been calculated: comparative statistics are presented and analysed to show secular and spatial shifts in the values for age structure and fertility. The role played by mortality in Newfoundland's demographic progression is also calculated, and, utilising these indices, inferences are drawn concerning patterns of migration and circulation.[14]

Age Structures

It is a commonplace of demography and population geography that the age distribution of a population is of fundamental importance in influencing the behavioural patterns in that group. Therefore an analysis of age structures was made for each district in Newfoundland for each

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[14] The data used above to describe regional growth and decline of population can be taken as reasonably accurate at the level of generalization here employed. The indices now being developed however, being more inferential, are less 'firm' and therefore many of the conclusions drawn must be broad enough to allow for error. These conclusions are however considerably more advanced and more precise than anything previously attempted on this theme.

census year. Coulson's method of computation was used, whereby the b value or slope of the least squares line drawn to express the relationship between the mid-points of the age groups (x), and the percentage of the total population in each group (y) was simply transformed into an Age Structure Index consisting of five digits.[15]

The general results of the Age Structure analysis are given in Figure 2.4 from which it can be seen that the indices range from a value of 58,000 (the youngest) for one district in 1836 to a value of less than 32,000 (the oldest) in 1935. The overall picture is one of the steady ageingof the population -- each set of figures occupies a range slightly lower down the age axis than its predecessor. This in itself is not surprising -- one would expect a youthful pioneer population to age over the decades -- but the consistency of the Newfoundland data is impressive, not least because it suggests a reasonable level of veracity in the census data.

The only marked deviation from the general trend occurs in 1921 when the range of values is clearly shifted upwards, indicating a more youthful population composition. This may be explained by the higher fertility (see below) associated with the euphoric mood arising from the general prosperity during the First World War.

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[15] Coulson, M.R.C., "Age Structures in Kansas City" A.A.A.G. vol. 58, 1968, pp. 155-176. Although it was not necessary to transform the Newfoundland values by the addition of -0.1 to each, as in fact all the values fell naturally on the minus side, the transformation was carried out to make the results comparable with Coulson's work.

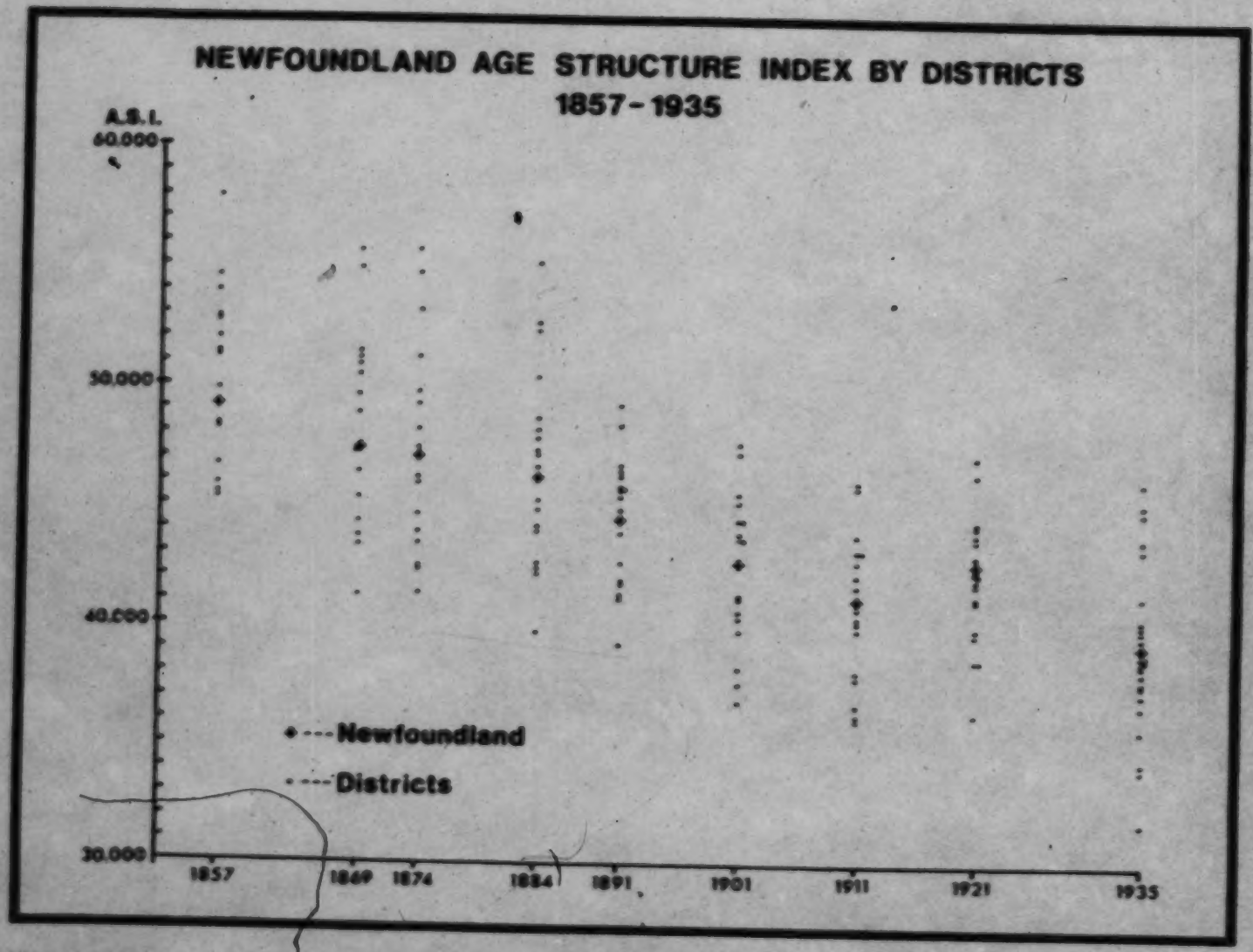

Figure 2.4: Age Structure Indices, Newfoundland Districts 1857-1935

One further note should be made on the general trend--although the population as a whole, and in its separate parts, exhibits a consistent ageing trend, the index at the end of the period still denotes a 'young' population, young that is, when compared with some contemporary populations. The early age structures denoted an excessively youthful series of populations (indeed one demographer would term them 'primitive')[16] -- in these years, even the 'oldest' age structures remained strongly 'progressive' in the sense of having more than enough potential for rapid replacement. At no time do district populations become so old that they become strongly 'regressive' although in 1935 many districts do exhibit some of the characteristics of regressiveness.[17]

In order to assess the significance of the spatial and secular differences that appeared in the age structures, the indices were then graphed. The trends are depicted in Figure 2.5 -- for convenience, and to avoid too much graphic clutter, the districts were divided into three sets of

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[16] Vielrose, E., Elements of the Natural Movement of Population, Leiden, 1965, p. 40.

[17] Ibid, p. 41. Nine of the twenty-four districts had age-structures in which the % in the 10-19 age-group exceeded that of the 0-9 group, a basic criterion for regressiveness. But none of these districts had 0-9 % lower than 19.3 (Port de Grave) and most were over 20%. Vielrose suggests that a 0-9 % of below 16-17 is necessary before regressiveness truly sets in. In this case many populations of Newfoundland in 1935 were curiously hybrid in structure.

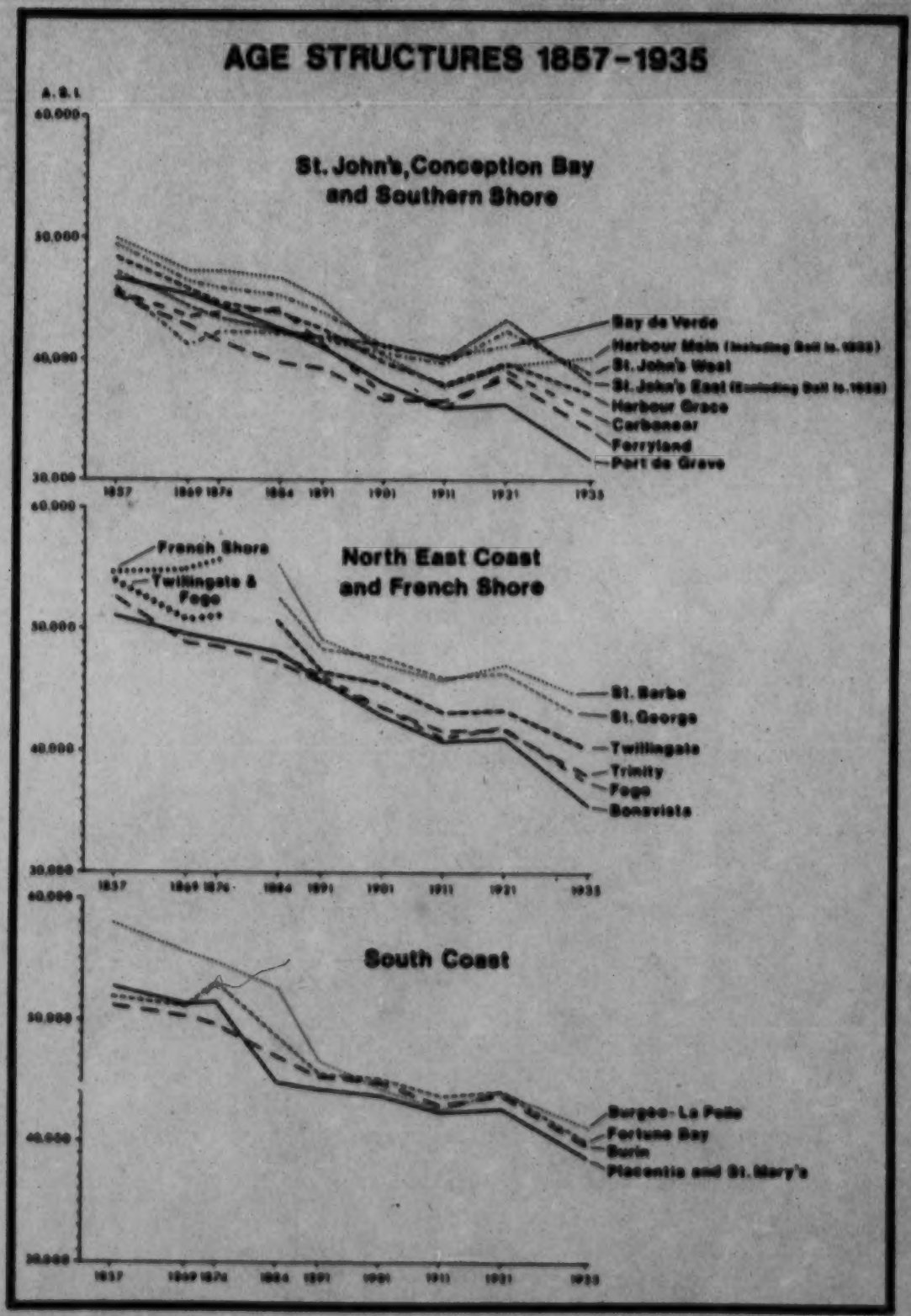

Figure 2.5: Age Structures by District and Area 1857-1935

contiguous units. Thus the data are set out separately for the area from Ferryland through St. John's to Conception Bay; then for the North East Coast and the French Shore; and finally for the South Coast.

Although this mode of subdivision is primarily one of convenience, it does appear, with hindsight, to reflect some intuitive realisation that the three zones thus divided represent, to a degree, distinct demographic provinces. For when the districts of South East Newfoundland are compared closely with those of the North East Coast they are seen to overlap very little, and that in the later years. The three districts of Carbonear, Port de Grave and Ferryland appear consistently as the most aged at least since 1891, and the districts of Trinity, Fogo and Bonavista, epitomising the nexus of interests that comprised traditional rural Newfoundland, decline steeply towards the end of the period to overlap these low levels. Only Twillingate escapes dipping to the same levels perhaps because of the vigorous growth of the pulp and paper town of Grand Falls in its landward portion. Most significant is the level of the values for the French Shore, later to be known as St. Barbe and St. George -- although they follow the same trend as the others, they lie consistently higher than any other group.

The graph lines for the South Coast districts follow essentially the same trends as the others though they begin higher (younger) and finish higher than any other district with the exception of the French Shore.

Fertility

Fertility trends were assessed over the period by use of the child-woman ratio[18]; although vital statistics are available since 1901, they are patchy in coverage for the early years, and the use of the child-woman ratio made possible a more comparative survey over the whole period. To make the comparision of the values even easier, an index was derived by averaging out all the raw values for all years. Then each fertility value was expressed as a percentage of the overall mean. The Fertility Indices are expressed in Table 2.3.

The data in this table are then plotted in Figure 2.6 in the same groupings used to depict regional and temporal variations in age structures. The fertility trends for South East Newfoundland (comprising the St. John's Districts, the Southern Shore and Conception Bay) demonstrate a fairly clear distinction between the values for St. John's and those for the other, more rural, districts. Almost without exception, the urban districts display lower fertility than the surrounding areas, and only in 1921 and 1935 does Port de Grave marginally distort this picture. In the other districts the fertility rates fluctuated widely in the earlier part of the period, but all declined steeply

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[18] The statistical measure adopted was $\frac{\text{number of children 0-4}}{\text{number of women 15-44}} \times 1000$. In the earlier censuses, ages were given only in ten year groups: this made precise calculations difficult. Therefore, the practice was adopted of calculating the children's group as 60% of the 0-9 age-group; the women were calculated as 50% of the 10-19 and 40-49 age-groups plus the whole of the 20-29 and 30-39 groups.

TABLE 2.3: NEWFOUNDLAND, FERTILITY INDICES BY DISTRICTS 1857-1935.

DISTRICT	1857	1869	1874	1884	1891	1901	1911	1921	1935
St. John's E.	89	87	80	79	67	68	65	85	47
St. John's W.	96	85	88	85	68	70	70	87	55
Harbour Main	124	98	110	124	94	79	85	117	75
Port de Grave	107	106	100	104	80	81	78	87	54
Harbour Grace	109	n.d.*	105	103	91	83	84	102	58
Carbonear	110	125	113	101	78	75	91	98	60
Bay de Verde	135	115	112	115	103	93	81	108	73
Trinity Bay	128	125	116	120	104	102	85	104	71
Bonavista Bay	120	121	119	119	97	88	83	104	59
Fogo	126	126	127	112	109	85	81	110	67
Twillingate				121	101	101	74	108	52
St. Barbe	142	140	148	141	128	118	102	128	97
St. George				124	128	127	102	131	101
Burgeo-LaPoile	147	169	141	130	98	102	95	122	78
Fortune Bay	132	140	125	114	94	103	89	114	73
Burin	124	127	122	113	95	100	89	102	73
Placentia and St. Mary's	130	141	106	100	99	101	84	100	67
Ferryland	102	110	122	103	81	78	90	104	63

* n.d = no data.

Source: Newfoundland Census 1857-1935; author's own calculations.

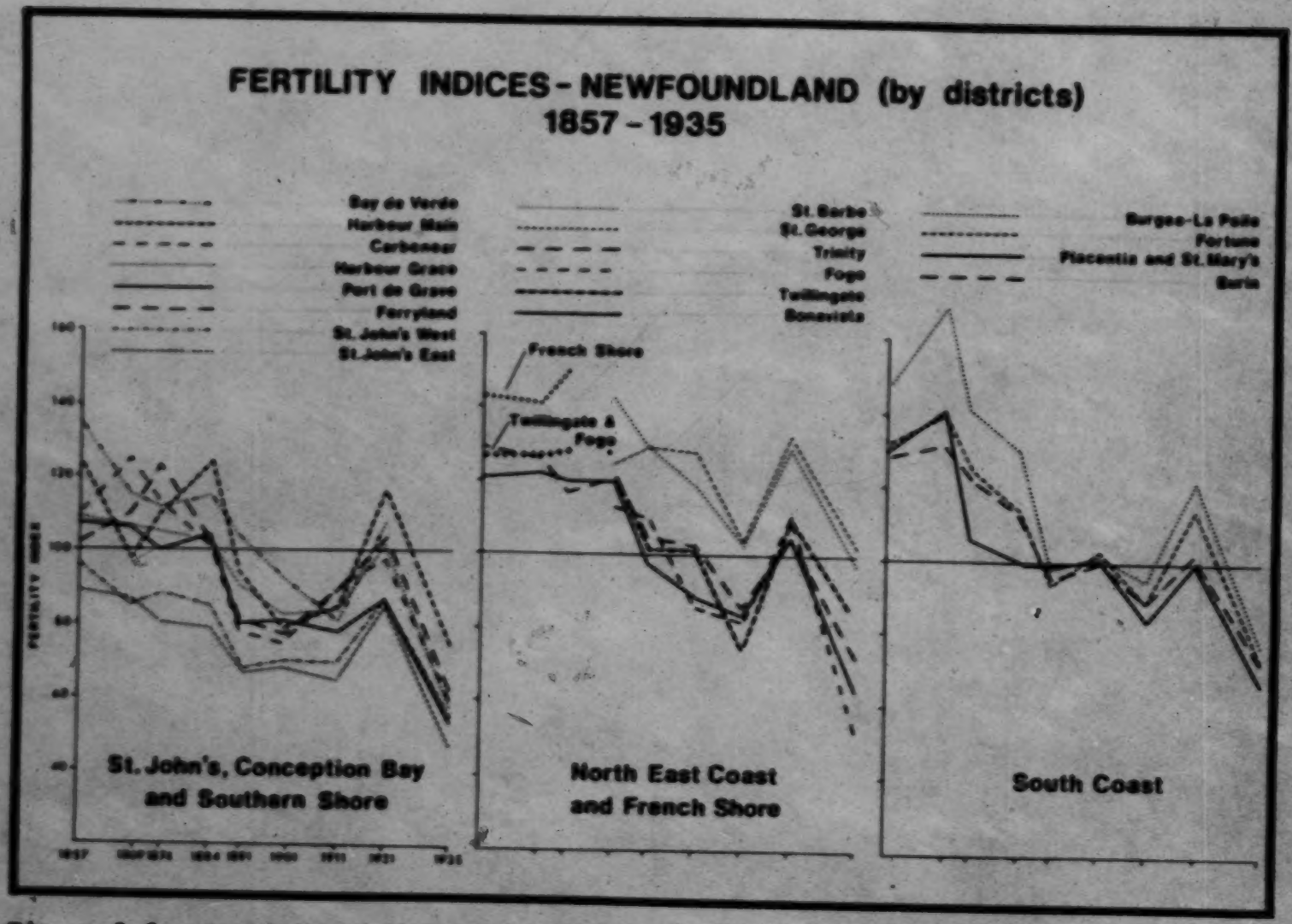

Figure 2.6: Fertility Indices by District and Area 1857-1935

after 1884. Again all districts experienced an advance in fertility in 1921, but this advance was universally eliminated in the final phase of the period. In essence, most of these districts over the whole period were characterised by average or below average fertility.

Fertility on the North East Coast appears to have been marginally higher than that in South East Newfoundland over most of the period. The sharp decline in values noted after 1884 for the first region was less marked here, and in most districts did not become pronounced until after 1901. In all other respects fertility trends and levels followed by the districts of the North East Coast were similar to those of the South East districts. The clear exception to this rule was the case of the French Shore districts: though the same trend was followed, fertility was always significantly higher.

Similar trends were seen in the fertility curves for the South Coast Districts. Here the decline in fertility came early but from much higher levels. In general, levels of fertility were higher than other districts (except the French Shore), with a relatively small proportion of the whole period spent at below average fertility.

This brief analysis of fertility trends, following that of age structures, must prompt some comment on the probable relationship between the two. It is clear from a comparison of both sets of graphs that levels of fertility and age structures in the various districts are positively

associated, and that the association persists through time: that is, the younger the population the higher the fertility and vice versa. The functional relationship between the two however is likely to be more intricate. Prima facie, it might seem that young populations are more likely to express themselves in higher levels of fertility than are old populations, and this would certainly be true if the measure of fertility was a crude birth rate. In this case, however, the fertility indices were derived from a statistic, the child-woman ratio, which already reflected, to a degree, differences in age structure. Hence it would be reasonable to assume that in the Newfoundland case, fertility is more the independent variable, and fertility fluctuations largely explain the variations in age structure. This being the case regional variations in the timing and level of fertility advance may be fundamental to prediction in many subsequent and dependent population dynamics.

Mortality

Mortality statistics for Newfoundland provide the most slender of all the demographic indices available, at least for the 19th century. Vital statistics were not available until 1901, and yet it is essential to get some idea of the mortality rates before that date to make possible inferences about early circulation patterns.

The only possible source of comprehensive statistics for mortality in the early period is the Census: it is

derived from responses to the question put to the head of each household asking the "number of Deaths in the previous 12 months". Clearly, this question is imprecise at least in the sense that it lends itself to the recording of innocent misinformation. Nevertheless, as it was the only source of evidence, the data given were analysed, and set beside the succeeding more formal and official rates, to see what information could be gleaned. The data are represented in Table 2.4.

Analysis of this table suggests that in most cases the sequences of values are not unreasonable -- the range of values in any one district from year to year, and the range from district to district, are not improbable considering the size of the populations and the arbitrary nature of the cross section. And in general the statistics inferred from the cruder Census data lose little by comparison with the official vital statistics.

If the statistics can be taken at their face value for the interpretation of broad trends, it will be seen that mortality trends to increase over the period as a whole. The two most problematic years which appear aberrant when compared with the trend are 1891 and 1921. The first of these years demonstrates an unusually high death-rate -- perhaps this is in part due to error, but it can also be attributed to the steep decline in fertility in the most populous districts in the years leading up to 1891, and the consequent ageing of the population. The excessively low

TABLE 2.4: NEWFOUNDLAND, MORTALITY BY DISTRICTS 1857-1921.
(0/00 population)

DISTRICT	1857 *	1874	1884	1891	1901	1911	1921
St. John's E.	9.3	14.5	17.1	23.7	22.7	22.1	16.2
St. John's W.	10.0	11.8	15.3	17.7			
Harbour Main	15.2	5.0	12.4	21.0	16.1	11.4	14.6
Port de Grave	8.6	14.0	17.6	18.0	20.8	19.3	15.6
Harbour Grace	11.5	8.8	11.1	18.6	18.8	16.0	15.4
Carbonear	11.2	8.7	9.2	14.6	19.7	17.8	16.8
Bay de Verde	11.0	13.1	20.2	20.6	18.6	18.4	14.5
Trinity Bay	9.6	16.5	13.6	30.4	15.8	17.1	12.3
Bonavista Bay	12.0	12.2	11.1	22.6	14.0	16.8	11.4
Fogo	8.6	7.1	18.2	20.3	12.0	13.0	15.4
Twillingate			8.7	29.7	13.3	11.1	11.6
St. Barbe	8.0	6.3	13.1	20.2	14.9	12.1	13.1
St. George			7.7	14.2	13.7	9.0	9.1
Burgeo-LaPoile	7.6	16.4	11.5	18.2	16.1	14.5	13.4
Fortune Bay	8.0	12.6	14.7	8.3	13.1	16.3	11.2
Burin	11.7	13.9	15.4	29.7	13.9	13.0	11.9
Placentia and St. Mary's	11.0	8.9	13.3	21.1	12.8	11.4	12.0
Ferryland	10.3	12.4	12.7	27.0	21.1	18.1	7.5
Newfoundland	10.3	11.5	13.6	22.0	17.0	16.0	13.3

* 1869 - no data.

Sources: Newfoundland Census 1857, 1874, 1884, 1891 - author's own calculations. Annual Reports of the Registrar of Births, Marriages, and Deaths, J.H.A., 1909, p. 520; J.H.A., 1912, pp. 559-570; J.H.A., 1922, pp. 180-191.

death rate for 1921 can, with more conviction, be attributed to the burst in fertility noted for that year and the consequent increase in the youthfulness of the population.

It remains to be explained why there should be a trend towards steadily increasing mortality with the passage of time, as it would seem in the light of gradually improving conditions elsewhere, that a diminution of mortality might be expected. It is here suggested that this phenomenon is not an aberration but is a function of the age-structure of the population. The extremely low death-rates of the earlier years are associated with the amazingly youthful populations (Vielrose's 'primitive' populations) of that period. As the population aged, so the crude death rate grew.[19]

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[19] This was probably a more complex function than is here so baldly stated. The chief cause of death for a long period was infantile mortality. In 1912, a Commission on Public Health stated that "Infantile mortality again forms the largest single item in the mortality tables", (J.H.A., 1912, p. 588). As late as 1921 33.7% of all deaths were of children 0-4 years of age (J.H.A., 1922, pp. 180-181). This might suggest that an increase in fertility would have the effect of raising mortality: but in fact an increase in fertility would result in a constant margin of live births, assuming that infantile mortality remained constant as it appears to have done. Thus, the secular increase in mortality in these circumstances is consistent with the phenomenon of an aging population -- in the early period much of the mortality would be concentrated in the earlier years of life: with the aging of the population this would be progressively supplemented by higher death rates in the more populous older age categories. Thus, mortality would increase overall through time.

Natural Increase and Migration

Given the foregoing analyses of the admittedly imperfect data on fertility and mortality it is possible to compute statistics to represent intercensal natural increase. By comparing these latter figures with the more certain data for actual intercensal increase (see Table 2.2) it then becomes possible to make calculations as to net migration and circulation. These comparative data are given in Table 2.5.[20]

When these data are incorporated into the maps already used to depict population change (Figures 2.1 - 2.3), a picture of the population movement which developed over the period becomes clear. It is apparent that as early as 1857-69 no district in South East Newfoundland could maintain the whole of its own moderate growth. Even the vigorously expanding North East Coast, in Trinity and Bonavista Bays, was hard put to accommodate its own increase. Only the French Shore, and to a lesser extent the South Coast in Burgeo and Fortune attracted considerable numbers of inmigrants.

The pattern set thus early remains fairly consistent, with few deviations. St. John's intermittently attracts as well as despatches net flows of migrants; the

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[20] The calculations for the period from 1891-1921 are nearly absolutely correct, as figures for natural increase are given in the appropriate censuses. Before 1891, no such data exist, and the figures in the table are reasoned estimates from the information available on fertility, mortality and age structure. As such, they lack the force of the latter data.

TABLE 2.5: NATURAL INCREASE, ACTUAL INCREASE AND NET MIGRATION NEWFOUNDLAND BY DISTRICTS 1836-1935

(Average Annual %)

DISTRICT	1836-57			1857-69			1869-74			1874-84			1884-91			1891-01			1901-11			1911-21			1921-35		
	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.	N.I.	A.I.	N.M.
St. John's E.	*	2.9	*	1.5	-0.1	-1.6	1.5	0.7	-0.8	1.9	2.5	1.5	1.1	-0.9	-2.0	1.0	2.2	1.2	1.2	-0.2	-1.3	1.3	1.3	0.1	*	0.6	*
St. John's W.				1.1	-0.9	-2.4	1.5	1.9	0.4	1.8	2.5	1.5	1.98	-0.6	-1.6				1.1	1.1	0.0	1.5	1.6	0.1	*	1.4	*
Harbour Main				2.8	1.8	-1.0	2.6	1.9	-0.1	2.0	2.5	0.5	1.5	0.4	-1.1	1.4	0.3	-1.1	1.4	-0.1	-1.5	1.4	-0.3	-1.6	*	0.7	*
Port de Grave				2.0	1.3	-0.7	1.5	1.8	-1.3	1.0	1.0	0.0	1.8	-1.2	-2.2	1.2	-0.7	-1.7	0.9	-0.6	-1.5	0.8	-0.6	-1.4	*	-0.9	*
Harbour Grace	*	2.1	*	2.5	2.2	-0.3	1.5	0.5	-1.0	1.5	1.3	-0.2	1.0	-0.8	-1.8	1.1	-0.9	-2.0	1.4	-0.4	-1.8	1.1	-0.4	-1.5	*	-0.6	*
Carbonear				1.5	0.6	-0.9	1.0	-0.5	-1.5	1.0	1.1	0.1	1.0	-1.0	-2.0	0.9	-1.3	-2.2	0.9	0.2	-0.7	1.1	-0.6	-1.8			
Bay de Verde				2.0	1.1	-0.9	1.5	1.1	-0.4	1.2	1.3	0.1	1.5	2.2	0.7	1.0	0.1	-0.9	1.3	0.4	-0.6	1.1	0.4	-0.8	*	-0.9	*
Trinity Bay	*	4.0	*	2.5	2.4	-0.1	2.5	2.7	0.2	2.2	2.1	-0.1	2.5	-0.1	-1.6	1.6	1.8	-0.6	1.3	0.5	-0.8	1.1	0.8	-0.3	*	0.1	*
Bonavista Bay	*	3.4	*	2.5	2.6	0.1	2.5	2.5	0.0	2.2	2.7	0.5	1.5	1.2	-0.3	1.6	1.5	-0.1	1.4	1.1	-0.3	1.2	0.8	-0.4	*	0.2	*
Fogo	*	4.7	*	2.5	2.9	0.4	2.5	3.2	0.7	2.0	3.4	0.6	1.5	2.2	0.7	1.7	2.3	-0.6	1.2	0.9	-0.3	1.2	1.1	-0.1	*	0.3	*
Twillingate																2.2	1.6	-0.6	1.6	1.7	0.3	1.6	1.6	0.2	*	0.2	*
St. Barbe	*	*	*	3.0	5.1	2.1	2.5	12.1	8.6	3.0	3.0	0.8	2.0	1.6	-0.6	2.3	2.2	-0.1	2.2	2.0	0.7	2.0	1.6	-0.6	*	1.3	*
St. Georges																2.1	3.7	0.6	2.4	3.0	0.6	2.3	1.4	-0.9	*	0.8	*
Burgeo-LaPoile	*	6.0	*	3.0	3.7	1.7	3.0	-0.1	-1.9	2.5	2.8	0.3	1.5	-0.2	-1.7	2.1	0.8	-1.3	2.1	1.1	-1.0	1.8	1.1	-0.7	*	0.5	*
Fortune Bay				2.0	4.2	1.7	2.0	2.1	-0.9	2.0	2.5	0.5	2.0	1.6	-0.6	2.1	1.4	-0.7	1.8	1.6	-0.4	1.7	1.3	-0.6	*	0.5	*
Burin	*	3.6	*	2.5	1.8	-0.7	2.5	2.0	0.3	1.1	1.1	-0.2	2.0	0.9	-1.1	2.1	1.5	-0.6	1.6	1.1	-0.5	1.1	0.8	-0.3	*	0.3	*
Placentia and St. Mary's		3.7		2.0	0.5	-1.5	2.4	2.4	0.0	1.5	1.2	-0.3	1.5	1.2	-0.3	1.8	2.4	0.6	1.4	0.1	-1.3	1.2	0.2	-1.0	*	-0.1	*
Ferryland	*	0.1	*	1.5	1.2	-0.3	1.5	1.6	0.1	1.8	-0.1	-0.9	0.5	-1.4	-1.9	0.6	-0.3	-0.9	1.1	0.2	-0.9	0.8	0.4	-0.4	*	-0.7	*

* no data

1921-35 data incomplete for vital statistics because of boundary changes

Sources: Newfoundland Census 1836-1935 - author's own calculations. Tables 2.2, 2.3, 2.4.

Conception Bay Districts continue to send out streams of surplus population, gradually to be joined by the surplus from the districts of the North East Coast as they too fill up their available space. The South Coast districts, especially Ferryland are a picture of unrelieved demographic gloom, as with rare exceptions, much of the natural increase is winnowed away.

It seems clear from the foregoing analyses that the high rate of natural increase could not or would not be accommodated within the confines of the island colony. Almost from the earliest periods the long settled distrfcts of the Avalon Peninsula were sending out surplus population to the more thinly peopled outlying bays and peninsulas. But as these areas became full, a more drastic resort was to be had by permanent out-migration from the colony -- sometimes to Canada, but more usually to the United States. If the statistics and contemporary accounts are to be believed, this long slow trickle of emigrants became a flood after 1884. But for many years before this flood took place, there had developed a less painful strategy as a response to the problems of overpopulation -- the strategy was one of seasonal migration associated with the prosecution of the Labrador fishery.

The Labrador Migrations

In face of increasing pressure on available resources, first felt in the old-established, spatially-restricted

districts of the Avalon Peninsula, there developed a pattern of seasonal migration in which many fishermen, with their families, would spend the summer fishing on the Labrador coast. This fishery was functionally divided into two parts, the 'floater' fishery and the 'stationer' fishery. In the first of these, schooners carrying local crews sailed each June or early July from Conception Bay and the North East Coast -- their fishing was conducted from their 'floating' base, the schooner. The stationers were fishermen who went up to the Labrador and prosecuted the fishery from shore 'stations'.

The floater fishery has already been intensively analysed by Black[21] who noted that the greatest activity in this sector was experienced from about 1875-1910. At one time early in the 20th century, as many as 1400 vessels left Newfoundland each summer -- for example, in 1907 when "1192 vessels were engaged in fishing, their total crews numbered 8344 persons". The stationer fishery has never been so closely analysed, possibly because in the earlier period it is difficult to distinguish in the record between stationer and floater. But to gain some idea of the significance of the Labrador fishery as a factor in the maintenance of the population of Newfoundland, the available Census data have been collated and are here presented in Table 2.6 and Figure 2.7.

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[21] Black, W.A., "The Labrador Floater Codfishery", A.A.A.G., vol. 50, 1960, pp. 267-295.

TABLE 3.6A POPULATION ENGAGED IN THE LABRADOR FISHERY BY DISTRICTS 1884-1935

(% of District Population)

District	1884 Total Population	1884 % Men	1884 % Women and Children	1884 Total	1891 Total Population	1891 % Men	1891 % Women and Children	1891 Total	1901 Total Population	1901 % Men	1901 % Women and Children	1901 Total
St. John's E.	22,183	1.4	0.5	1.9	26,776	0.2	-	0.2	21,512	0.3	0.1	0.4
St. John's W.	15,561	6.7	1.8	8.5	15,251	-	-	-	18,483	0.1	-	-
Harbour Main	8,935	4.2	1.4	5.6	9,299	7.0	1.2	8.2	9,500	7.1	1.2	8.3
Port de Grave	8,698	20.7	10.8	24.5	7,194	19.0	7.2	26.2	7,445	22.4	8.5	31.0
Harbour Grace	14,727	15.9	9.9	25.8	13,881	14.3	7.3	21.5	12,671	14.5	4.3	18.8
Carbonear	6,208	24.6	17.4	44.0	5,765	13.1	7.8	20.1	5,023	13.1	6.9	20.0
Bay de Verde	8,407	8.2	4.7	12.9	9,708	9.7	3.8	13.5	9,827	4.9	1.4	6.3
Trinity Bay	19,035	7.1	1.5	8.6	28,872	6.8	6.5	6.5	30,695	8.5	0.4	8.9
Bonavista Bay	15,489	8.4	1.5	9.9	27,849	10.2	1.3	11.5	26,557	9.2	1.0	10.2
Fogo	4,264	0.3	0.1	0.4	6,700	5.7	0.7	6.4	7,578	4.9	0.1	5.0
Twillingate	14,058	10.9	0.6	11.5	16,780	6.7	0.3	7.0	19,453	5.1	0.3	5.4
St. Barbe	6,500	1.5	0.1	1.6	6,690	0.1	-	0.1	8,134	0.3	-	0.3
St. George	5,473	0.4	0.4	0.8	6,832	0.7	0.2	0.9	9,108	0.9	0.3	1.2
Burgeo-LaPoile	6,144	0.4	-	0.4	6,471	0.4	-	0.4	7,011	0.4	-	0.4
Fortune Bay	6,917	4.6	-	4.1	7,671	0.1	-	0.1	8,762	0.7	-	0.7
Burin	8,502	-	-	-	9,059	-	-	-	10,402	-	-	-
Placentia and St. Mary's	11,789	0.2	-	0.2	12,891	-	-	-	15,196	-	-	-
Ferryland	6,472	-	-	-	5,853	-	-	-	5,697	-	-	-
Newfoundland	191,124	6.5	2.6	9.1	197,934	5.3	1.4	6.7	217,037	4.9	1.0	5.9

District	1921 Total Population	1921 % Men	1921 % Women and Children	1921 Total	1931 Total Population	1931 % Men	1931 % Women and Children	1931 Total	1935 Total Population	1935 % Men	1935 % Women and Children	1935 Total
St. John's E.	25,135	-	-	-	28,419	-	-	-	29,565	-	•	-
St. John's W.	22,356	-	-	-	23,729	-	-	-	25,321	-	•	-
Harbour Main	9,471	3.1	0.6	3.7	9,262	1.1	0.3	1.4	15,817	1.1	•	1.1
Port de Grave	6,984	13.6	4.7	18.3	6,545	9.7	3.4	13.1	8,756	7.7	•	7.7
Harbour Grace	11,929	9.8	2.4	12.2	11,453	6.5	1.8	8.3	7,563	5.1	•	5.1
Carbonear	5,116	14.9	6.3	20.9	4,838	7.8	3.6	11.4	13,489	2.8	•	2.8
Bay de Verde	10,213	3.1	1.0	4.1	10,666	2.1	0.5	2.6	23,854	2.6	•	2.6
Trinity Bay	34,788	9.3	0.7	10.0	23,422	3.2	0.1	3.3	24,872	7.0	•	7.0
Bonavista Bay	32,991	9.4	0.4	9.8	24,754	7.2	2.9	10.1	9,596	1.5	•	1.5
Fogo	5,257	4.6	0.1	4.5	9,134	2.1	0.2	2.3	11,428	0.9	•	0.9
Twillingate	29,705	3.4	0.1	3.5	26,320	1.4	0.1	1.5	10,549	0.4	•	0.4
St. Barbe	26,491	1.0	0.2	1.2	12,176	1.3	-	1.3	9,748	-	-	-
St. George	12,841	0.5	-	0.5	12,566	0.1	-	0.1	9,293	0.2	•	0.2
Burgeo-LaPoile	7,911	0.1	-	0.1	8,645	-	-	-	11,334	-	-	-
Fortune Bay	9,929	0.7	-	0.7	11,272	2.7	1.1	3.8	10,660	0.4	•	0.4
Burin	11,614	0.5	-	0.5	12,579	-	-	-	18,829	-	-	-
Placentia and St. Mary's	16,063	-	-	-	16,472	0.7	0.2	0.9	6,682	-	-	-
Ferryland	5,793	-	-	-	6,615	-	-	-				
Newfoundland	334,478	3.8	0.6	4.4	298,239	2.1	0.6	2.7	304,872	1.6	•	1.6

• no data.

% Men = Number of men going to Labrador as % of whole district population.

% Women and Children = number of women and children going to Labrador as % of whole district population.

Source: Newfoundland Census 1884-1935 - author's own calculations.

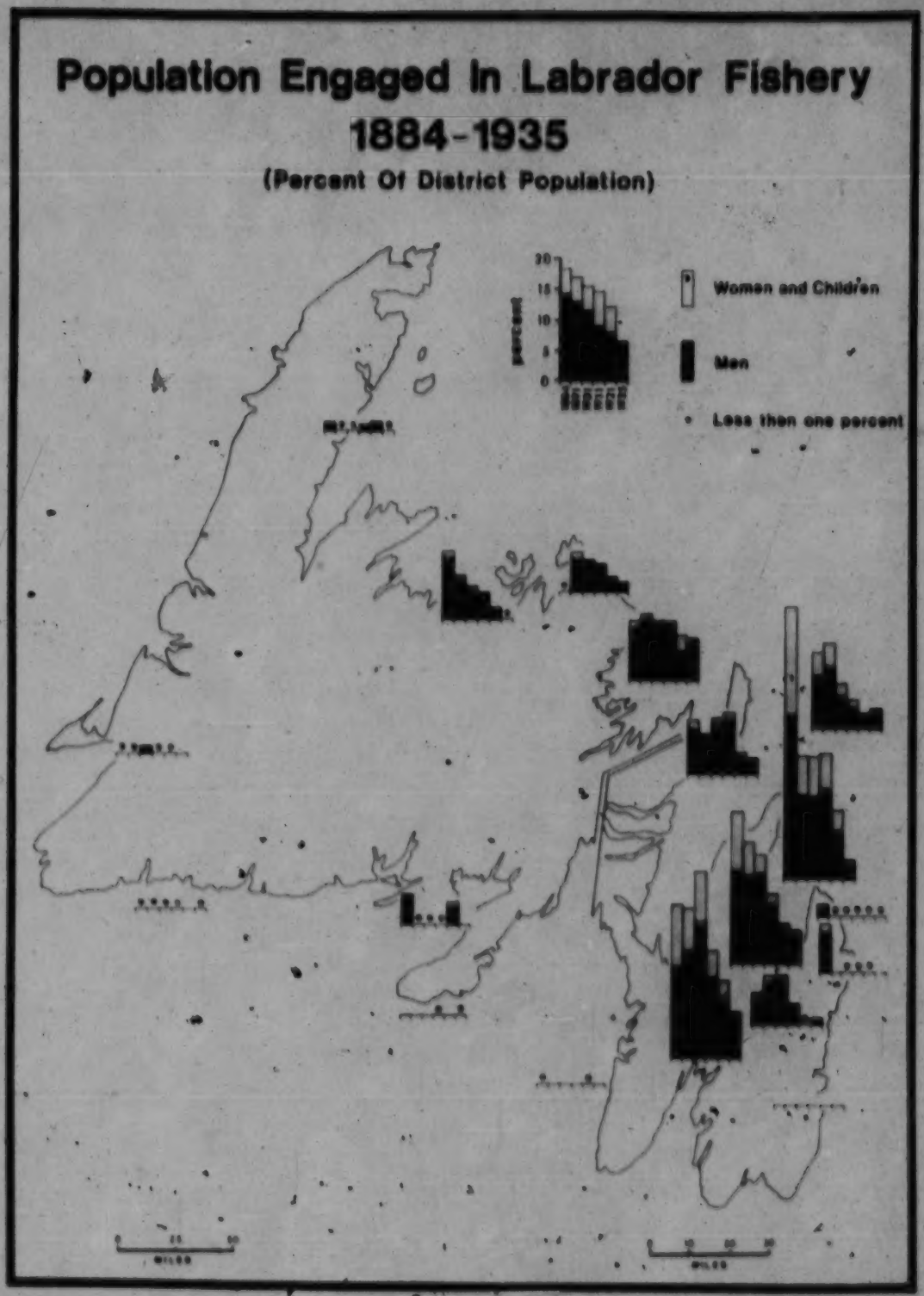

Figure 2.7: Population Engaged in Labrador Fishery 1884-1935

The analysis of data and map gives an uncomplicated but none the less striking picture. The overall interest in the Labrador fishery, expressed both in real numbers and as a proportion of population declined over the period -- although the actual numbers of people going to the Labrador declined a little, the proportion of a growing population represented by these numbers declined steeply. The Conception Bay districts, and to a lesser degree the North East Coast, were the heart of the Labrador venture: in 1884, for example 44% of the total population of the district of Carbonear summered on the Labrador. This percentage was made up of 26.6% males and 17.4% women and children. If the male adult labour force comprised roughly one-third of the population, it can be seen that about 70-80% of the working males were migrant labourers. Admittedly this example was an exception, but in degree rather than in kind, for other Conception Bay districts exhibited similar concentrations of Labrador migrants.

This pattern persisted, though with more moderate levels of seasonal migration until 1911 after which there was a marked decline. But even in 1935 (and later) the tradition continued and we see 5% or 7% of the population of certain districts in Conception Bay repeating their annual migration. If there was a shift that was both secular and spatial in this phenomenon, it was that the decline in migration from Conception Bay was not so emphatically repeated on the North East Coast: in essence, the people of

Conception Bay found the Labrador migrations to be less and less of a salvation, and as their stake in the seasonal fishery dwindled, their only option remaining was to leave the colony. This is reflected in the migration statistics presented previously. The North East Coast maintained its modest level of association with the Labrador fishery for a longer period, and its out-migration was less severe, though it cannot be asserted from this that these factors are causally associated.

Nevertheless, the Labrador migrations played a crucial role in the emerging spatial dynamics of Newfoundland's population: although the economic raison d'etre of the fishery diminished, it yet remained an attractive outlet, in both social and economic terms, to many otherwise marginal family units, and the momentum developed in former more prosperous times has carried over into the present.

CHAPTER III

POPULATION MOVEMENT IN NEWFOUNDLAND 1935-45

Although it is possible to infer patterns of population movement and dynamics during the first century of Newfoundland's existence as a separate political entity, there is no direct evidence for the scale and direction of internal circulation. The 1945 Census however, conducted under the aegis of the Commission of Government and with the advice of Canada's Dominion Bureau of Statistics, contained, amongst others, one important innovation -- each Newfoundland resident ten years of age and over was asked to name his district of residence in 1935, the year of the previous Census. The data thus recorded were published in two exceptionally useful tables[1] which are the more valuable as the experiment was not repeated. The 1935-45 data therefore offer a unique opportunity for the analysis of migration and circulation.

The Scale of Mobility 1935-45

The scale of internal movement of population over

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[1] Census of Newfoundland, St. John's, 1945, Table 41: Newfoundland-born population 10 years of age and over, showing movement of population, by district of residence in 1945. Table 42: Newfoundland-born population 10 years of age and older by district or county of residence in 1935, and district of residence in 1945.

TABLE 3.1: INTERNAL POPULATION MOVEMENT BY DISTRICT AND SEX OF NEWFOUNDLAND-BORN POPULATION > 10 YEARS.
(as % of 1945 population)[2]

CODE	DISTRICT OF RESIDENCE 1945	TOTAL NEWFOUNDLAND BORN POPULATION > 10 YEARS			RESIDING IN SAME DISTRICT			IN-MIGRANTS FROM OTHER DISTRICTS			OUT-MIGRANTS TO OTHER DISTRICTS			MALE NET MIGRATION	FEMALE NET MIGRATION
		1 MALE	2 FEMALE	3 TOTAL	4 MALE	5 FEMALE	6 TOTAL	7 MALE	8 FEMALE	9 TOTAL	10 MALE	11 FEMALE	12 TOTAL	13	14
	Newfoundland	123,253	116,244	239,497	90.1	86.8	88.5	9.6	12.6	10.9	9.4	12.6	10.9		
A	White Bay	4,178	3,548		94.4	93.7		5.4	6.2		3.8	6.3		+1.6	- 0.1
B	Green Bay	3,355	3,095		96.7	95.2		2.7	4.2		8.8	11.3		-6.1	- 7.1
C	Grand Falls	6,877	6,487		83.4	80.8		16.1	18.6		7.7	9.4		+ 8.4	+ 9.2
D	Twillingate	3,706	3,513		95.5	91.9		4.2	7.7		9.4	11.0		- 5.2	- 3.3
E	Fogo	4,188	3,669		97.4	94.8		2.6	4.8		8.4	11.9		- 6.8	- 7.1
F	Bonavista North	5,184	4,636		95.0	93.2		4.7	6.6		10.8	14.1		- 6.1	- 7.5
G	Bonavista South	4,926	4,457		95.1	94.1		3.9	5.1		9.9	13.7		- 6.0	- 8.6
H	Trinity North	5,214	4,768		93.6	91.4		6.1	8.2		9.6	12.9		- 3.5	- 4.7
I	Trinity South	4,439	3,977		95.6	93.1		4.2	6.6		12.6	17.7		- 8.5	-11.1
J	Carbonear-Bay de Verde	5,107	4,799		96.7	93.7		2.9	5.6		11.3	14.7		- 8.4	- 8.7
K	Harbour Grace	2,770	2,675		94.8	91.3		4.8	8.2		10.2	15.1		- 5.4	- 6.9
L	Port de Grave	3,309	3,149		96.3	92.6		3.1	6.8		9.3	14.7		- 6.2	- 7.9
M	Harbour Main-Bell Island	6,627	6,044		94.5	91.0		5.1	8.6		5.7	9.6		- 0.6	- 1.0
N	St. John's West	13,034	14,412		88.9	84.8		10.6	14.5		24.2	25.8		-13.6	-11.3
O	St. John's East	10,368	11,682		61.6	56.3		37.8	43.0		3.0	4.5		+34.8	+38.5
P	Ferryland	3,074	2,228		98.4	94.8		1.8	4.9		4.6	12.9		- 2.8	- 8.0
Q	Placentia and St. Mary's	3,766	3,318		93.1	91.2		6.7	8.5		10.4	17.4		- 3.7	- 8.9
R	Placentia West	3,879	3,357		93.8	92.6		6.1	7.2		4.7	7.7		+ 1.4	- 0.5
S	Burin	4,137	3,984		95.9	94.0		3.6	5.4		10.8	13.8		- 7.2	- 8.4
T	Fortune Bay-Hermitage	4,614	4,182		98.4	97.4		1.2	2.4		8.9	12.4		- 7.7	-10.0
U	Burgeo-LaPoile	3,693	3,285		94.7	92.9		4.9	6.4		4.7	6.6		+ 0.2	- 0.2
V	St. Georges-Port au Port	4,849	4,051		85.0	84.7		13.7	13.5		4.0	5.9		+ 9.7	+ 7.6
W	Humber	7,231	6,867		82.7	80.4		16.5	18.6		5.6	7.1		+10.9	+11.5
X	St. Barbe	2,881	2,449		97.8	96.9		2.1	2.7		8.5	14.3		- 6.4	-11.6
Y	Labrador	2,125	1,738		96.0	95.7		3.3	3.7		8.1	8.8		- 4.8	- 5.1

Source: Census of Newfoundland and Labrador 1945 Table 41, p. 125; author's own calculations.

this period is indicated in Table 3.1.

Analysis of this table suggests at first sight that mobility must have been relatively restricted during this period. Of the 25 districts, 20 (or 80%) recorded more than 90% of their 1945 population as living in the same district as ten years before (Columns 4 and 5). In most cases, the figure was substantially in excess of 90%, and not infrequently approached 100%: Fogo, males 97.4%; Carbonear-Bay de Verde, males 96.7%; Ferryland, males 98.0%; Fortune Bay and Hermitage, males 98.4%, females 97.4%; St. Barbe, males 97.8%, females 96.0%. In only one case, St. John's East, is the 1945 population substantially adventitious, although Grand Falls, St. John's West, St. George's-Port au Port, and Humber each record 10-20% of their 1945 population as being immigrant.

In practice this apparent picture of stability should not be overdrawn for it is in part a function of the statistics used. If account is taken of out-migrants, who do not appear in the same district over the two censuses, the stability is seen to be, to a degree, illusory.

However, insofar as there was any stability in the population, a comparison between Columns 4 and 5 shows that it was greater amongst the male population than amongst the female. Most districts recorded about 2-3% fewer females in the category of non-movers, the greatest difference being in St. John's East (5.3%). Thus, although the difference was seldom marked, it was a consistent indication of the

greater propensity of females to migrate.

Migrational Distributions

The gross statistics for intra-provincial migration have been mapped in Figure 3.1 from which there emerges a fairly straightforward picture of migrational distributions. On the one hand, the districts dominated by the major urban centres of St. John's, Grand Falls, Corner Brook and Stephenville are seen to gain from migration, the symbol denoting in-migration always far exceeding that for out-migration. The example of the St. John's districts is complicated by the division of the City of St. John's by the boundary between St. John's East and St. John's West. The extreme contrasts of in and out-migration depicted between the two areas were in large part caused by population shifts within the city, but across the district boundary. Of the 6872 out-migrants from St. John's West, 86% moved into St. John's East. If the two districts are combined, and movement between them eliminated from the calculation, we find that 6267 moved out, a ratio of 3.8:1. Humber recorded a positive ratio of 2.8:1, and Grand Falls 2.1:1. The only other district demonstrating an unambiguous growth from migration was St. George's-Port au Port around the burgeoning urban centre of Stephenville, where the positive ratio was again 2.8:1. Of the rural districts, only White Bay, Placentia West, and Burgeo-LaPoile experienced a

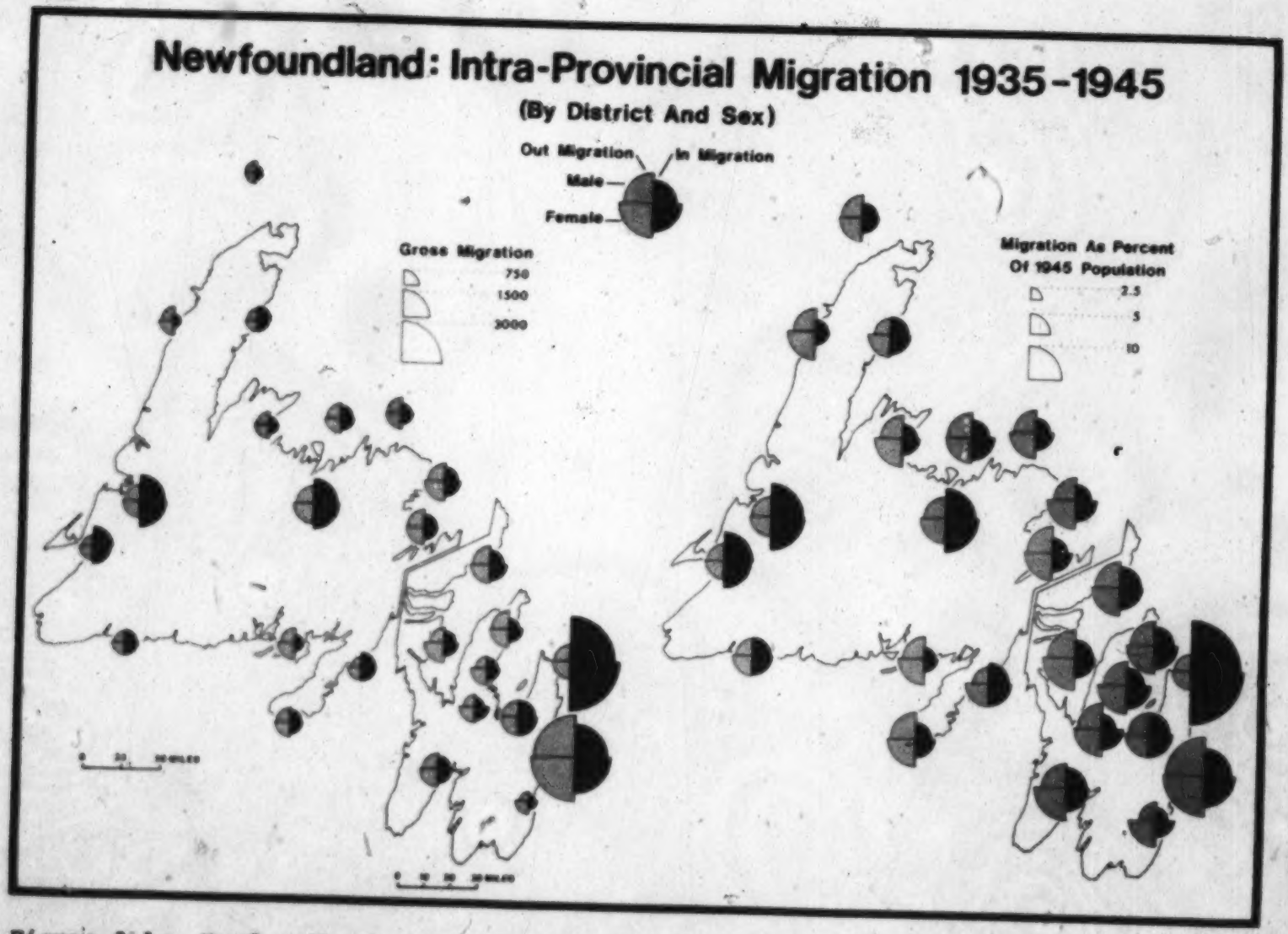

Figure 3.1: Newfoundland - Intra-Provincial Migration (by District and Sex) 1935-45

marginal excess of in-migrants over out-migrants.

A more typical situation is seen in the sixteen remaining rural districts which recorded net migration losses. In only one case were these losses marginal (Harbour Main 1.1:1): most districts lost between two and three times the number of people they gained, and in the extreme case of Fortune Bay and Hermitage, the ratio of loss to gain was 6.0:1.

Figure 3.1 also depicts the raw data on in and out-migration in percentage terms -- this has the effect of removing the influence of the widely varying district population totals. The pre-eminence of the urban centres is diminished by this method, and the rates of migration experienced by the rural districts, particularly those on the North-East Coast, are increased. With the exception of the St. John's districts, most rural districts generate as much migration proportionate to population as do the urban districts.

Migration Structures

More interesting however is an analysis of the structure of migration generated in each district. A visual examination of both gross and percentage symbols in Figure 3.1 shows that considerable similarity obtained over large areas of Newfoundland. However, variations do exist and three categories of migration structure can be recognised.

The most obvious category is represented by the

situation, designated Case 1, in which the strongest component in the structure of migration is female out-migration which exceeds male out-migration. This in turn exceeds female in-migration which again is greater than male in-migration. This type of situation may be expressed for convenience as FOM>MOM>FIM>MIM.

In order to assess more accurately the consistency amongst districts with this structure, the percentage values for each of the migrational components were tabulated in Table 3.2 and then indexed as a percentage of the dominant component, female out-migration.

The indices tabulated were then graphed in Figure 3.2. Fourteen of the 25 districts fall unambiguously into Case 1 with three (St. John's West, Ferryland, and Labrador) exhibiting minor variations from the typical structure.

A secondary category, Case 2 was distinguished from Case 1 by the structural sequence FOM>FIM>MIM>MOM. The indices for this category are calculated in Table 3.3.

Case 3 districts were clearly distinguished from both Cases 1 and 2. These were the urban districts of Grand Falls, Humber, St. John's East and St. Georges, characterised in their migration structure by a dominance of female in-migration. Indices for these districts are set out in Table 3.4

These cases or categories of migration structure are simple descriptive tools. Case 1 districts, characterised by rural decrement, are obviously the mirror image

TABLE 3.2: DISTRICTS WITH CASE 1 MIGRATION STRUCTURES

DISTRICT	% Values				Indices			
	FOM	MOM	FIM	MIM	FOM	MOM	FIM	MIM
Green Bay	11.3	8.8	4.2	2.7	100	78	37	24
Twillingate	11.0	9.4	7.7	4.2	100	85	70	38
Fogo	11.9	8.4	4.8	2.4	100	71	40	20
Bonavista N.	14.1	10.8	6.8	4.7	100	77	48	33
Bonavista S.	13.7	9.9	5.1	3.9	100	72	37	28
Trinity N.	13.0	9.6	8.2	6.1	100	74	63	47
Trinity S.	17.7	11.6	6.6	4.2	100	66	38	24
Carbonear-Bay de Verde	14.7	11.3	6.0	2.9	100	77	41	20
Harbour Grace	15.1	10.2	8.2	4.8	100	68	54	32
Port de Grave	14.7	9.3	6.8	3.1	100	63	46	21
Placentia and St. Mary's	17.4	10.4	8.5	6.7	100	60	49	39
Burin	13.8	10.8	5.4	3.6	100	78	39	26
Fortune Bay - Hermitage	12.5	8.9	2.4	1.2	100	72	19	10
St. Barbe	14.3	8.5	2.7	2.1	100	59	19	15
Variants								
St. John's W.	25.8	24.2	14.5	10.6	100	94	56	41
Ferryland	12.9	4.6	4.9	1.8	100	36	38	14
Labrador	8.1	8.1	3.7	3.3	100	100	46	41

Source: Table 3.1; author's own calculations.

TABLE 3.3: DISTRICTS WITH CASE 2 MIGRATION STRUCTURES

DISTRICT	% Values				Indices			
	FOM	FIM	MIM	MOM	FOM	FIM	MIM	M_OM
White Bay	6.3	6.2	5.4	3.8	100	98	86	60
Placentia W.	7.7	7.2	6.1	4.7	100	94	80	61
Burbeo-LaPoile	6.6	6.4	4.9	4.7	100	97	75	71
Variant								
Harbour Main	9.6	8.6	5.1	5.7	100	90	53	59

Source: Table 3.1; author's own calculations.

TABLE 3.4: DISTRICTS WITH CASE 3 MIGRATION STRUCTURE

DISTRICT	% Values				Indices			
	FIM	MIM	FOM	MOM	FIM	MIM	FOM	MOM
Grand Falls	18.6	16.1	9.4	7.7	100	87	51	41
Humber	18.6	16.5	7.1	5.6	100	88	39	30
St. John's E.	43.0	37.8	4.5	3.0	100	88	10	7
Variant								
St. George's -Port au Port	13.5	13.7	5.9	4.0	100	101	44	30

Source: Table 3.1; author's own calculations.

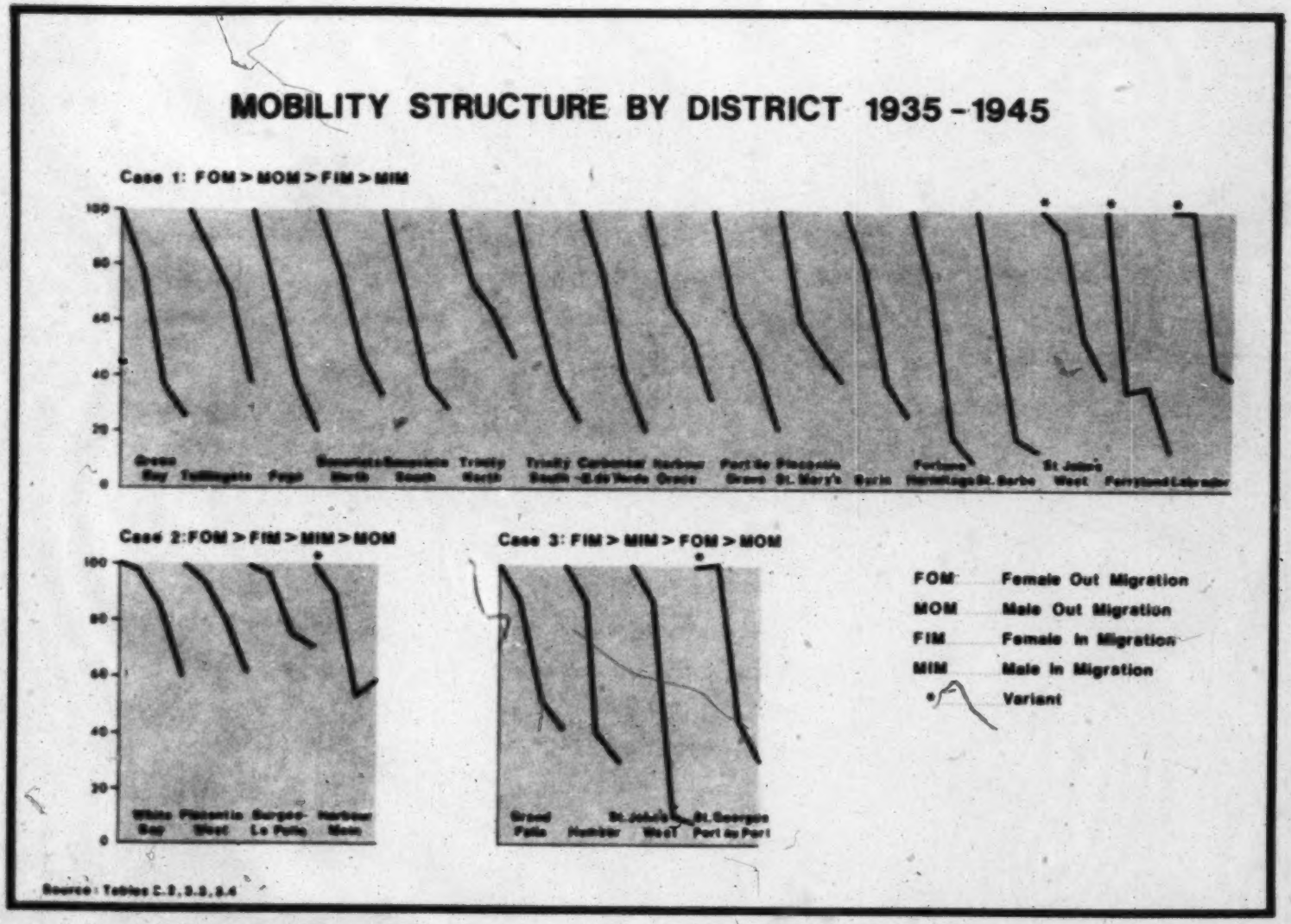
MOBILITY STRUCTURE BY DISTRICT 1935-1945
Case 1: FOM > MOM > FIM > MIM
Case 2: FOM > FIM > MIM > MOM
Case 3: FIM > MIM > FOM > MOM
FOM Female Out Migration
MOM Male Out Migration
FIM Female In Migration
MIM Male In Migration
Variant
Source: Tables C.2, 3.3, 3.4

Figure 3.2: Mobility Structure by District 1935-45

of Case 3, the areas of urban increment. Case 2 districts are in some ways transitional between Cases 1 and 3 -- though FOM is their main component, it is balanced by successive in-migration components. In addition the disparity between the indices is much reduced. These rural districts may be said to be holding their own.

Migrational Efficiency

The data examined thus far have tended to emphasize the dominant role of females in the migrational process. But in migration, the heaviest flows may not always be the most significant ones, at least in respect of their effect on the pattern of population redistribution. This distinction is given point by the analysis of migrational efficiency.

The concept of migrational efficiency was developed by Shyrock[3]: it gives an index of 'efficiency' gained from the ratio of net migration to the total in and out (gross) migration, and expressed in the formula

$$M_e = \frac{I-O}{I+O} \times 100$$

where M_e = migrational efficiency, and I and O represent in and out-migration respectively.

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[3] Shyrock, H.S. Jr., "Redistribution of Population 1940-50", Journal of the American Statistical Association, vol. 46, 1951, pp. 417-437.

The index thus obtained may vary from 0 to 100. The higher the index of efficiency (whether positive or negative) the more significant the role of migration as a re-distributor of population (i.e. the greater the disparity between in and out-migration). The lower the index, the more the migration, whatever its gross size, reflects reciprocal or compensating streams.

Indices of migrational efficiency for the several districts of Newfoundland are given in Table 3.5.

It is at once apparent that the indices of male mobility are, in most cases, greater than those of female mobility. This finding would therefore seem to contradict the assertion made previously, that female mobility was the more substantial. In fact it does not offer such a contradiction for the index of migrational efficiency is measuring a different feature -- whereas female migrational flows are greater in quantity, these flows tend more to cancel each other out i.e. they are more evenly balanced than male flows. Male migrational flows however tend to be more unbalanced and thus the efficiency index is higher. In essence the act of migration functioned to redistribute males more 'efficiently' than females in the period in question.

Other modes of migrational analysis confirm and further this impression. If the net migration for each district, for example, is computed by the vital statistics

TABLE 3.5: MIGRATIONAL EFFICIENCY, BY DISTRICT AND SEX, NEWFOUNDLAND 1935-45

DISTRICT	MALE	FEMALE	TOTAL
White Bay	+17.6	- 0.9	+ 7.7
Green Bay	-53.4	-45.5	-49.1
Grand Falls	+35.2	+32.3	+33.8
Twillingate	-38.5	-17.9	-26.8
Fogo	-55.8	-42.8	-48.3
Bonavista North	-39.3	-36.4	-37.7
Bonavista South	-43.0	-45.8	-44.6
Trinity North	-22.5	-22.3	-22.4
Trinity South	-50.4	-45.4	-47.6
Carbonear-Bay de Verde	-58.8	-44.4	-50.6
Harbour Grace	-35.9	-29.6	-32.1
Port de Grave	-50.0	-36.7	-41.7
Harbour Main-Bell Island	- 5.7	- 5.6	- 5.6
St. John's West	-39.0	-28.2	-32.9
St. John's East	+85.2	+81.0	+83.0
Ferryland	-42.9	-44.6	-44.0
Placentia and St. Mary's	-22.0	-34.1	-28.9
Placentia West	+12.7	- 3.4	+ 3.9
Burin	-50.2	-43.6	-46.5
Fortune Bay and Hermitage	-75.9	-68.0	-71.4
Burgeo-LaPoile	+ 1.7	- 2.1	- 0.4
St. Georges-Port au Port	+54.5	+39.0	+47.7
Humber	+49.3	44.7	+46.9
St. Barge	-60.0	-68.7	-65.0
Labrador	-42.5	-41.0	-41.8

Source: Census of Newfoundland 1945, Table 41; author's own calculations.

method[4], Table 3.6 may be constructed for comparisons. The analysis of this table suggests interesting shifts of emphasis in the distribution of migration as compared with previous interpretations, although inferences should be made with caution.[5] In the first place net migration is heavier when assessed by the vital statistics method. This, however, is only to be expected, since the vital statistics method measures the total migration, both the internal migration and the external movement (i.e. both into and out of the province). Secondly, and more significant, the migration differentials observed previously between the sexes are diminished, or even reversed. In six districts (Green Bay, Grand Falls, Bonavista North, Bonavista South, Trinity North and Harbour Grace) the migration structure in which female movements exceeded male movements was changed to one of male dominance. In nine other districts (White Bay, Trinity South, Port de Grave, Harbour Main, Bell Island, Ferryland, Burin, Fortune Bay and Hermitage, Burgeo-LaPoile,

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[4] Bogue, D.J., "Internal Migration", in Hauser, P.M. and Bogue, D.J., The Study of Population, Chicago, 1959, pp. 486-509 esp. p. 492.

[5] The populations being 'rated' for migration by the two methods are not identical, and the vital statistics method itself is subject to error--see Bogue op. cit. In addition the vital statistics for Newfoundland in this period are subject to some error as in 1935 and 1936 some data were collected for districts larger than those used by the 1935 Census. Thus, for example, in these years births and deaths were given for Trinity, rather than for Trinity North and Trinity South. In these cases, vital statistics were pro rated on the basis of the 1935 population of the smaller districts. Despite these problems, it is felt that the results gained are sufficiently realistic for broad inferences to be drawn.

TABLE 3.6: MIGRATION COMPUTED BY THE DIRECT METHOD AND THE VITAL STATISTICS METHOD, NEWFOUNDLAND 1935-45.

DISTRICT	DIRECT METHOD		VITAL STATISTICS	
	MALE NET MIGRATION (%)	FEMALE NET MIGRATION (%)	MALE NET MIGRATION (%)	FEMALE NET MIGRATION (%)
White Bay	+ 1.6	- 0.1	- 1.5	- 2.4
Green Bay	- 6.1	- 7.0	- 9.9	- 8.8
Grand Falls	+ 8.4	+ 9.1	+ 2.8	+ 1.5
Twillingate	- 5.2	- 3.4	- 7.0	- 5.0
Fogo	- 6.0	- 7.1	- 7.4	- 8.8
Bonavista North	- 6.1	- 7.5	- 9.0	- 6.6
Bonavista South	- 6.0	- 8.6	- 8.4	- 7.4
Trinity North	- 3.5	- 4.7	- 9.7	- 9.0
Trinity South	- 8.4	-11.1	-14.4	-15.5
Carbonear - Bay de Verde	- 8.4	- 9.0	-13.8	-15.9
Harbour Grace	- 5.4	- 6.9	-18.3	-16.4
Port de Grave	- 6.2	- 7.9	-12.0	-12.6
Harbour Main-Bell Island	- 0.6	- 1.0	- 3.4	- 3.7
St. John's West	-13.6	-11.3		
St. John's East	+34.8	+38.5	+ 1.2	+ 2.9
Ferryland	- 2.7	- 8.0	- 6.1	- 8.5
Placentia and St. Mary's	- 3.8	- 8.8	+ 3.4	- 3.6
Placentia West	+ 1.4	- 0.5	-10.2	- 8.8
Burin	- 7.2	- 8.4	-13.1	-12.2
Fortune Bay and Hermitage	- 7.6	-10.1	-12.9	-13.0
Burgeo-LaPoile	+ 0.2	- 0.3	- 9.4	- 9.5
St. Georges-Port au Port	+ 9.7	+ 7.6	+ 4.6	+ 3.0
Humber	+ 10.9	+ 11.5	+ 4.2	+ 2.7
St. Barbe	- 6.4	-11.6	- 8.5	-10.1
Labrador	- 4.8	- 5.1	+ 5.1	+ 2.3

Sources: Table 3.1; Census of Newfoundland 1935 and 1945; Returns of the Registrar of Vital Statistics, St. John's, 1935-45; author's own calculations.

St. Barbe) the differential was reduced, usually by a considerable amount. This suggests that male migrants were proportionately more dominant in longer distance moves into and out of the colony: and it reinforces the analysis of migrational efficiency. In general, though female migrational flows were numerically heavier, they tended more to be reciprocal internal flows. Male flows tended to be more effective in redistributing the male population around the colony and were dominant in long distance mobility, particularly outside the boundaries of the colony.

Table 3.6 presents in addition several interesting anomalies the most striking of which is the record for Labrador which shows a distinct reversal: by the direct method of computation, Labrador is shown to be losing population, both male and female, to the rest of the colony. But by the vital statistics method, it gained by net migration. The obvious inference is that although Newfoundlanders, on balance, moved out of Labrador during this period, their places were more than taken up by newcomers from outside the colony.

The Analysis of Migration Regions

Although the foregoing modes of analysis provide useful insights into the scale and structure of Newfoundland's internal migration, their utility is limited by the fact that they give little indication of the distributional network through which losses occur, and by which gains are derived. This limitation can be reduced, to a large extent,

by analysis of the direct data to give weight to the flows occurring between each pair of districts.

The direct data on migration in Newfoundland, set out in Table 3.7, were processed in an attempt to discover migration regions within the colony.[6] A migration region has been defined by previous workers[7] as a "closely-knit" area "within which internal migration is high". This relatively heavy internal circulation (or intra-regional circulation) should dominate the inter-regional migration.

The data in Table 3.7 were treated initially according to Ng's formula for the W_{ij} index which attributes a weight to the migrational linkage between any two districts. The W_{ij} indices resulting were then plotted in a matrix which is reproduced in Figure 3.3. An examination of the matrix suggests that four regions of internal migration may be identified. These regions were recognised by the examination of migrational flows, and particularly by the relative degree of strength with which contiguous and non-contiguous districts were integrated by migration.

Thus, the matrix by its grouping of the dominant symbols of integration suggests a high degree of mutual association among the districts of the North and West Coasts

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[6] Each district is given by name and is also given a code letter for more convenient reference in the text and on the maps.

[7] Hollingsworth, T.H., Migration: a study based on Scottish experience between 1939 and 1964. University of Glasgow Social and Economic Studies Occasional Papers No. 12, 1970, esp. pp. 71-76, and Appendix 2 pp. 173-182. Ng, R., "Internal Migration Regions in Scotland", Geografiska Annaler, vol. 52B, 1969, pp. 139-147.

TABLE 3.7: INTERNAL MIGRATION IN NEWFOUNDLAND 1935-45:
POPULATION > 10 YEARS 1945

Origin 1935	Arrival 1945	Green Bay	Grand Falls	Twillingate	Fogo	Bonavista N.	Bonavista S.	Trinity N.	Trinity S.	Carbonear-Bay de Verde	Harbour Grace	Port de Grave	Harbour Main-Bell Island	St. John's W.	St. John's E.	Ferryland	Placentia and St. Mary's	Placentia West	Burin	Fortune Bay & Hermitage	Burgeo-La Poile	St. Georges-Port au Port	Humber	St. Barbe	Labrador	White Bay	Total Out-Migrants
		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	A	
B	Green Bay	-	313	29	3	14	2	4	3	6	1	4	3	40	41	-	6	1	5	1	3	4	62	-	10	71	635
C	Grand Falls	56	-	91	31	88	69	51	47	22	11	18	27	102	105	10	42	2	14	2	1	60	240	1	7	19	1142
D	Twillingate	4	306	-	73	16	5	26	5	9	5	1	8	52	32	-	6	5	2	9	2	13	125	-	17	14	735
E	Fogo	16	256	91	-	27	8	40	8	1	2	4	9	94	74	-	6	-	-	3	4	29	70	16	8	14	774
F	Bonavista N.	7	160	18	31	-	152	72	18	13	19	4	21	290	213	8	8	4	8	5	5	15	102	1	3	37	1214
G	Bonavista S.	4	108	14	9	90	-	140	26	30	-	11	27	261	186	-	12	2	7	2	7	36	96	1	1	28	1098
H	Trinity N.	8	167	9	30	60	37	-	41	9	25	14	13	232	206	1	9	8	12	3	16	42	165	1	4	16	1116
I	Trinity S.	9	191	15	7	30	15	110	-	84	23	19	25	233	262	1	40	6	8	7	6	24	133	6	3	8	1265
J	Carbonear-Bay de Verde	8	63	12	7	18	9	26	57	-	41	18	64	407	363	1	22	3	10	12	5	25	68	6	20	17	1282
K	Harbour Grace	-	33	1	4	22	8	20	24	42	-	43	119	135	155	1	16	2	5	1	4	9	37	5	-	1	687
L	Port de Grave	7	73	8	6	14	4	4	25	13	52	-	60	201	210	6	13	2	6	-	2	14	37	3	9	4	773
M	Harbour Main-Bell Island	4	41	1	2	7	11	8	29	15	17	59	-	269	257	13	72	5	8	2	-	63	56	-	3	3	945
N	St. John's W.	1	96	18	7	9	17	36	54	30	87	36	226	-	5915	65	114	23	9	5	5	29	83	7	-	-	6872
O	St. John's E.	5	53	17	22	54	25	51	30	35	5	35	86	129	-	41	27	6	24	8	16	42	104	3	4	28	840
P	Ferryland	-	10	-	-	2	3	-	4	4	-	-	13	182	158	-	24	5	9	1	3	7	10	-	-	-	435
Q	Placentia and St. Mary's	2	63	-	-	-	4	15	32	14	10	7	51	213	228	12	-	60	13	6	1	158	73	2	-	5	969
R	Placentia West	2	11	1	3	9	-	10	6	7	-	2	14	79	90	1	60	-	53	6	-	5	81	-	1	-	441
S	Burin	7	64	5	4	14	2	6	7	16	7	10	21	198	123	3	14	306	-	47	12	46	70	2	3	7	994
T	Fortune Bay and Hermitage	-	22	1	2	6	35	3	10	-	7	1	6	69	62	-	11	21	149	-	250	193	71	2	4	4	929
U	Burgeo-LaPoile	-	36	1	5	-	2	5	3	1	1	-	6	27	40	-	2	3	8	24	-	57	158	11	1	1	392
V	St. Georges and Port au Port	7	34	2	-	8	2	-	2	5	-	1	6	46	49	-	5	2	4	5	12	-	241	4	1	-	435
W	Humber	33	130	26	5	36	1	16	6	17	7	8	29	101	101	2	17	5	-	5	23	249	-	21	4	40	891
X	St. Barbe	16	31	12	5	7	5	1	9	2	-	8	-	11	24	1	2	1	4	-	11	54	311	-	12	67	594
Y	Labrador	3	14	7	3	11	1	33	2	21	40	15	-	22	10	2	2	-	1	1	-	6	34	33	-	63	324
A	White Bay	25	36	36	11	17	5	11	11	25	3	-	10	74	42	1	4	1	2	-	1	10	39	1	18	-	383
	Total In-Migrants	217	2311	424	270	549	421	788	449	421	353	318	844	3467	8944	169	534	477	363	155	389	1210	2466	126	133	447	26165

Source: Census of Newfoundland, 1945, Table 42.

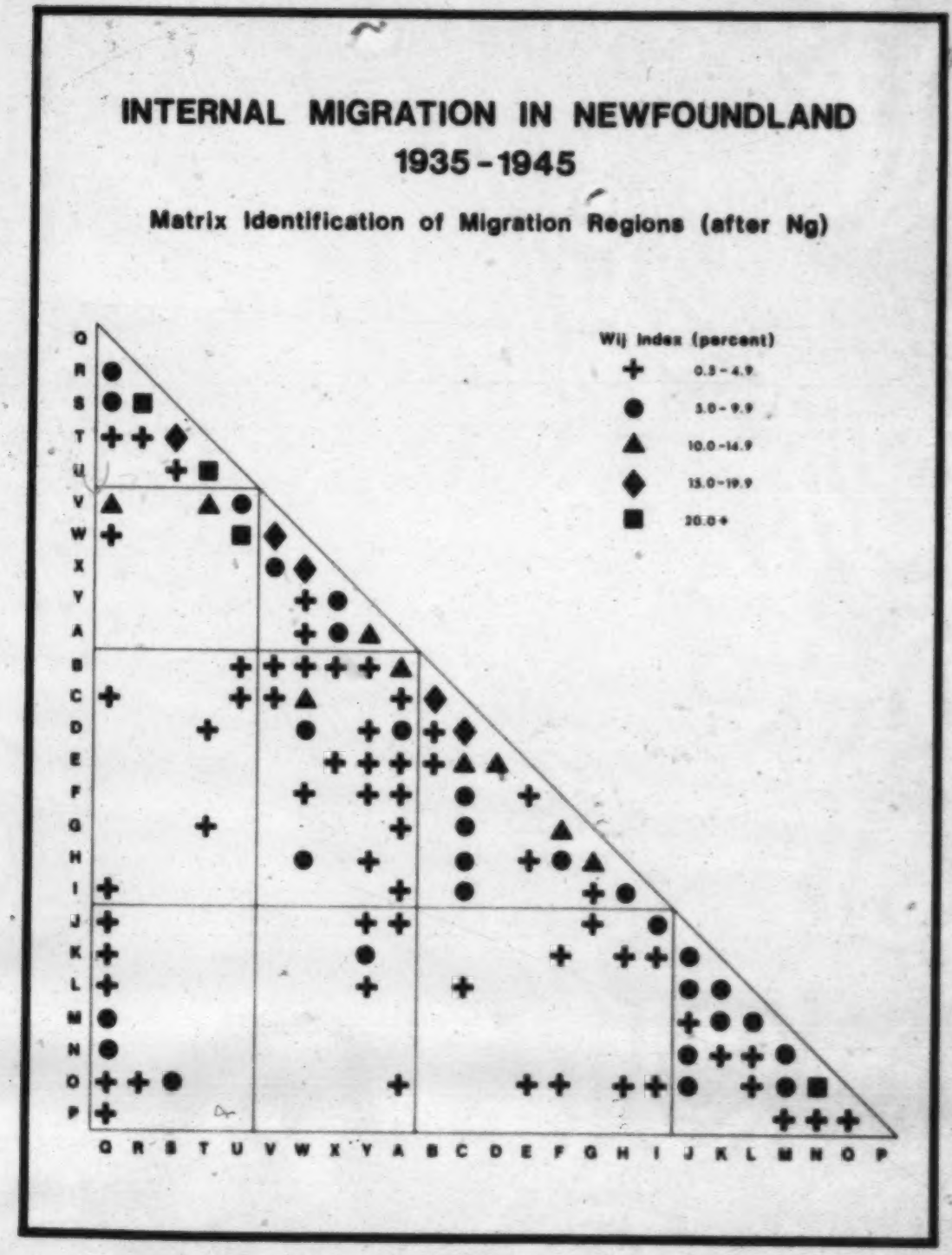
INTERNAL MIGRATION IN NEWFOUNDLAND
1935-1945
Matrix Identification of Migration Regions (after Ng)
Wij Index (percent)
0.3 - 4.9
5.0 - 9.9
10.0 - 14.9
15.0 - 19.9
20.0 +
Q R S T U V W X Y A B C D E F G H I J K L M N O P

Figure 3.3: Newfoundland-Internal Migration 1935-45
Matrix Identification of Migration Regions
(after Ng)

and Labrador; among districts of the South Coast; among districts of the North East Coast; and among districts of the Avalon Peninsula. This broad regional classification was further refined by the individual analysis of districts which would not be placed unambiguously from the matrix. Thus Placentia and St. Mary's (Q) was associated with the South Coast; Trinity South (I) was associated with the North-East Coast; and White Bay (A) was tied in with the North and West Coasts. The four regions thus derived, with their census populations, are given in Table 3.8.

There were in 1945 26,165 persons over the age of ten years who had changed their district of residence during the period 1935-45. The distribution of this total amongst the four regions defined above is summarised in Table 3.9 which indicates the amounts and proportion of in and out movement, and of internal circulation, for each region.

From this table and the accompanying maps (Figure 3.4) the general patterns of migration become apparent. A clear majority of the total moves, 57.8%, were intra-regional, and only 42.2% were inter-regional. Of the inter-regional migrations, the largest single flow was that from the North-East Coast (NE) to the Avalon Peninsula (AV). This flow was followed in magnitude (though distantly) by another emanating from NE and having the North and West Coasts (NW) as its destination. Other substantial flows were from the South Coast (SC) to AV, and from AV to NE.

TABLE 3.8: INTERNAL MIGRATION REGIONS, NEWFOUNDLAND, 1935-45.

NW NORTH AND WEST COASTS		NE NORTH-EAST COAST	
Labrador		Green Bay	
White Bay		Grand Falls	
St. Barbe		Twillingate	
Humber		Fogo	
St. George's-Port au Port		Bonavista North	
		Bonavista South	
		Trinity North	
		Trinity South	
Census Population	39,887		72,257
% of Total	16.6%		30.2%

SC SOUTH COAST		AV AVALON	
Burgeo-LaPoile		Ferryland	
Fortune Bay and Hermitage		St. John's East	
Burin		St. John's West	
Placentia West		Harbour Main	
Placentia and St. Mary's		Port de Grave	
		Harbour Grace	
		Carbonear-Bay de Verde	
	38,215		89,138
	16.0%		37.2%

Source: Figure 3.5; author's own calculations.

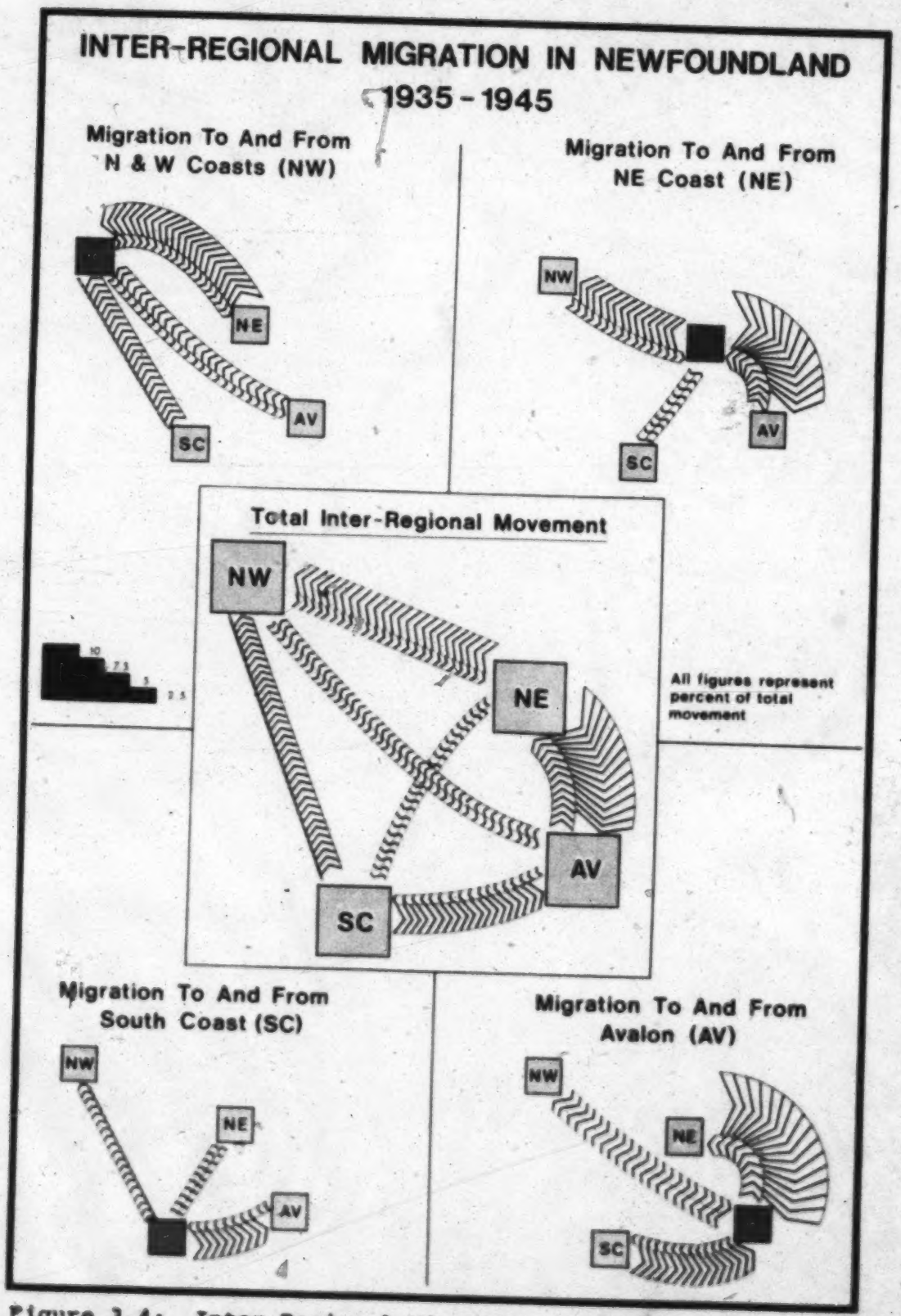

Figure 3.4: Inter-Regional Migration in Newfoundland 1935-45

Some variation in the volume of inter-regional flow is only to be expected, not least because of differences in the populations of the regions defined. However, when the variable of population is eliminated, by dividing the number of inter-regional migrants by the census population of the regions concerned, the resulting flow-rates (computed as the number of migrants per 1000 census population in Table 3.9 part 3 differ only rarely from the simple percentages of Table 3.9 part 2 . The only substantial anomaly occurs in the flow-rate from SC to NW, which at 12.2/1000 is significantly higher than the 3.6% flow would suggest. But in general, the patterns indicated by the percentage flows are confirmed, with the heaviest flows running from the NE region to AV and NW, closely followed by the flows out of SC -- in this case however, the linkage with NW is marginally stronger than that with AV.

A fairly simple inter-regional migration pattern can therefore be postulated in which the dominant movements are expressed schematically in Figure 3.5:

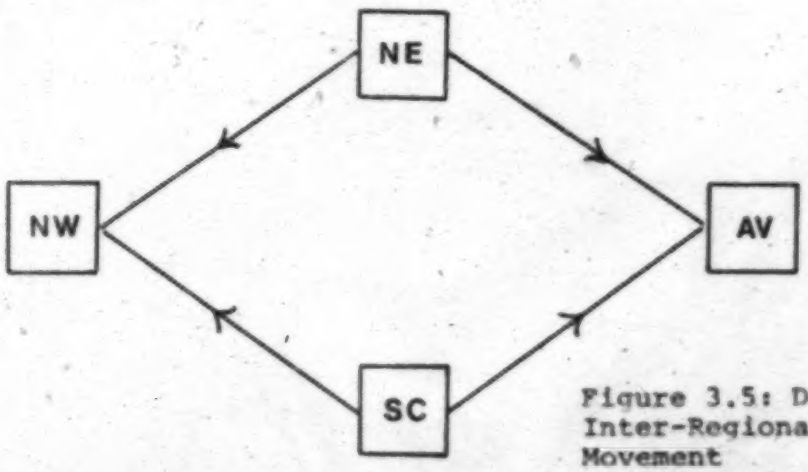

Figure 3.5: Dominant Inter-Regional Movement

TABLE 3.9: POPULATION MOVEMENT BY MIGRATION REGION, 1935-45.
by (1) number of movers; (2) percentage of total movers; (3) ratio.

		Arrival 1945					
Origin 1935		NW	NE	SC	AV	Total Out-Movement	Internal Movement
(1) Number of Movers	NW	-	628	108	683	1,419	1,208
	NE	1,522	-	295	2,899	4,716	3,263
	SC	955	398	-	1,326	2,679	1,046
	AV	697	1,060	469	-	2,226	9,608
Total In-Movement		3,174	2,086	872	4,908	11,040	15,125
						26,165	
		NW	NE	SC	AV	Total Out-Movement	Internal Movement
(2) % of Total Movers	NW	-	2.4	0.4	2.6	5.4	4.6
	NE	5.8	-	1.1	11.1	18.0	12.5
	SC	3.6	1.5	-	5.1	10.2	4.0
	AV	2.7	4.0	1.8	-	8.5	36.7
Total In-Movement		12.1	7.9	3.3	18.8	42.2	57.8
						100.0%	
		NW	NE	SC	AV		
(3) Ratio of Movers/Population	NW	-	5.6	1.4	5.3		
	NE	13.6	-	2.7	18.0		
	SC	12.2	3.6	-	10.4		
	AV	5.4	6.6	3.7	-		

Source: Table 3.8; Census of Newfoundland 1945, Table 43; author's own calculations.

Flows complicating this simple pattern are virtually non-existent: movements between NW and AV were modest in percentage (2.6 and 2.7%) and rate (5.2 and 5.4/1000), while the mutual flows between NE and SC were negligible (1.1 and 1.5%, and 2.7 and 3.5/1000). Both these flows functioned more as minimal and reciprocal exchanges than as real redistributors of the population.

Intra-regional migration however accounted for a greater proportion of population movement than inter-regional migration -- 57.8%, or 15125 of the 26165 moves recorded were internal to the four migration regions nominated. This percentage division accords well with that made by Hollingsworth[8] (47.6% intra-regional) though Ng[9] implies that 73% of his migrants were intra-regional and only 27% inter-regional. However, in the case of Newfoundland, a high proportion of the intra-regional migration is

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[8] Hollingsworth, op. cit., p. 75.

[9] Ng, op. cit., p. 144. Ng's account is not altogether free of ambiguity, though it is free of Hollingsworth's hard data. He notes in another place (p. 140) however, that of his 47954 recorded migrants 19.2% were unclassified as to origin or destination. If these are included in the calculation from which the implied 73% is derived it is possible to make the following adjusted calculations:

19.2% not classified	9,207
27.0% inter-regional	12,947
53.8% intra-regional	25,800
100.0%	47,954

If we assume that the unclassified migrants are distributed fairly evenly between inter-regional and intra-regional, then a figure of roughly 60% for intra-regional migration might be suggested. But the analysis as presented by Ng remains ambiguous.

accounted for by the Avalon (AV), which recorded 9608 or 63.5% of all intra-regional circulation. This high count is influenced heavily by the inclusion of the small yet populous districts of St. John's East and West and the somewhat arbitrary migrational flows between them (see previous chap.): these flows accounted for 6044 of the total 26165 migrants. Yet even if this flow is suppressed, the Avalon region still contains 39.3% of all the intra-regional movers, as Table 3.10 makes clear.

More important to the present analysis, the suppression of the St. John's districts' mutual migration flows reduces the total number of migratory moves to 20,121, of which 9,081 or 45.1% are intra-regional. This accords closely with Hollingsworth's 47.6% cited previously.

Perhaps the question that should be asked at this point is whether the migration regions as defined above are realistic? How far in fact do they conform to the criteria suggested by Hollingsworth and Ng?

A close analysis of the Scottish data shows that in most of the Scottish regions, the amount of internal circulation exceeds the volume of movement to or from any other single region. Perhaps this may be accepted as a sufficient criterion for the definition of migration regions. In the Newfoundland case, the same characteristics may be observed, though the dominance of internal migration over particular external streams is at best marginal, except in the case of the Avalon.

TABLE 3.10: DISTRIBUTION OF INTRA-REGIONAL MIGRATION, NEWFOUNDLAND, 1935-45

REGION	INTRA-REGIONAL MOVEMENT		INTRA-REGIONAL MOVEMENT EXCLUDING ST. JOHN'S FLOWS	
	TOTAL	%		%
NW	1,208	8.0	1,208	13.3
NE	3,263	21.6	3,263	35.9
SC	1,046	6.9	1,046	11,5
AV	9,608	63.5	3,564	39.3
Total	15,125	100.0	9,081	100.0

Source: Table 3.9; author's own calculations.

The existence of migration regions then may be accepted but with caution: there does not seem to be, in the Newfoundland case at least, unarguable evidence for the existence of self-sustaining patterns of circulation which are immutable.

Migration Regions Defined by Integration

A major weakness in the modes of analysis employed thus far has been the dependence on gross totals of migration flows, and percentages of total flows. What is lacking is a fairly refined index of the strength of interaction between pairs of districts, irrespective of their widely varying crude population totals and numbers of migrants. It is true that Ng's W_{ij} index, depicted in Figure 3.3, gives some impression of the strength of interaction, but the matrix is most useful for initial analysis and does not give an altogether clear visual impression of what we may call regional integration.

Hollingsworth's methodology has therefore been adapted to overcome this problem, Hollingsworth utilised the notion of Mobility Indices (M'_{ij})[10] which effectively

[10] The Mobility Index was derived from the formula $M'_{ij} = \frac{M_{ij} \sum_{i=1} \sum_{j=1} M_{ij}}{\sum_{i=1} M_{ij} \sum_{j=1} M_{ij}}$ in which M'_{ij} is the mobility index expressing the strength of flow from district i to district j; M_{ij} is the number of migrants from i to j; $\Sigma\Sigma M_{ij}$ is the sum total of all migrants in all districts; $\sum_{i=1} M_{ij}$ is the sum of all migrants from i; $\sum_{j=1} M_{ij}$ is the sum of all migrants to j.

expressed the strength of association (or interaction) between two districts.

The values derived for each M'_{ij} are summed with the reciprocal values for M'_{ji} to give an index of the strength of the two-way flow between any two districts. Any index for M'_{ij} "much greater than 1 is taken to imply a strong link between areas",[11] therefore any index greater than 2 for $M'_{ij} + M'_{ji}$ is taken as significant for the two-way flow, irrespective of the strengths of the different directions of the flow. The values for $M'_{ij} + M'_{ji}$ were calculated from the 600 potential flows between Newfoundland's twenty five districts to give 300 indices: these indices, here named Gross Mobility Indices, are given, together with a frequency analysis, in Table 3.11.

Of the 300 indices derived, 199 or almost exactly two-thirds exhibited values of less than 2.00 indicating that migration between the districts concerned was less than might have been expected given the overall volume of migrants sent out and received by all districts. At the other extreme, four pairs of districts recorded indices of over 20.00 thereby displaying at least ten times as much mutual interaction as might have been expected, other things being equal -- scores of this magnitude were called First Order Indices. Nine pairs of districts displaying scores

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[11] Hollingsworth, op. cit., p. 176.

TABLE 3.11: GROSS MOBILITY INDICES, NEWFOUNDLAND 1935-45

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
A	-																								
B	14.36	-																							
C	4.09	11.65	-																						
D	7.03	6.52	9.73	-																					
E	3.91	2.24	6.66	17.62	-																				
F	3.89	1.74	5.15	1.96	4.27	-																			
G	2.32	0.55	4.07	1.24	1.30	11.72	-																		
H	1.90	1.09	3.33	1.81	4.86	4.73	6.83	-																	
I	3.04	1.13	6.09	1.14	1.16	1.99	2.13	5.33	-																
J	4.01	1.34	1.76	1.35	0.62	1.33	2.15	1.25	6.69	-															
K	0.66	0.12	1.25	0.50	0.77	2.68	0.72	2.00	3.37	6.15	-														
L	0.30	1.61	2.36	0.76	1.21	1.13	1.16	1.22	3.11	2.29	10.10	-													
M	2.00	0.66	1.22	0.41	0.50	0.88	1.49	0.67	2.39	2.52	6.68	7.52	-												
N	1.65	0.69	0.83	0.69	1.09	1.86	1.97	1.75	1.85	2.66	3.41	2.36	3.16	-											
O	2.29	0.91	0.99	0.66	2.86	3.60	1.32	2.79	2.01	3.44	1.18	4.25	3.99	3.68	-										
P	0.60	0.00	1.61	0.00	0.00	1.24	0.43	0.14	0.65	0.69	0.22	1.20	3.04	4.61	0.68	-									
Q	0.81	0.71	3.53	0.40	0.41	0.32	0.80	0.96	3.46	1.73	1.90	1.41	5.35	2.46	2.28	4.60	-								
R	0.34	0.42	0.57	6.31	0.66	1.15	0.10	1.22	1.05	1.11	0.16	0.91	1.21	1.53	1.00	0.98	10.02	-							
S	0.79	1.42	1.84	0.52	0.39	1.14	0.59	0.09	0.96	1.56	1.04	1.34	1.26	1.59	2.44	1.96	1.65	25.46	-						
T	0.25	0.36	0.36	3.13	0.92	1.00	2.64	0.57	1.55	1.57	0.63	0.09	0.56	0.68	1.81	1.16	1.62	3.53	19.47	-					
U	0.32	0.33	1.11	0.34	1.63	0.29	0.76	1.64	0.77	0.42	0.58	0.17	0.48	0.57	1.59	0.46	0.32	0.42	2.29	28.46	-				
V	0.58	1.07	2.36	0.52	0.88	1.14	1.00	0.81	0.68	1.13	0.28	0.58	1.07	0.89	1.42	0.35	4.07	0.49	1.66	6.41	9.02	-			
W	1.73	5.37	3.93	3.68	0.69	2.30	1.04	3.18	1.53	1.76	1.16	1.26	1.65	0.98	1.69	0.66	1.75	2.30	0.76	1.77	6.02	12.04	-		
X	7.12	3.26	0.77	1.27	5.45	0.73	0.71	0.25	1.86	1.18	1.51	1.90	0.00	0.35	0.87	0.26	0.59	0.89	0.90	0.45	7.13	3.86	10.56	-	
Y	25.35	6.20	1.69	5.89	3.00	2.09	0.27	4.45	0....	7.07	9.23	6.90	0.62	0.51	1.01	0.95	0.30	0.44	0.81	1.36	0.51	0.85	8.02	25.03	-

Class Frequencies

0.00	- 0.99	110	= 36.7%
1.00	- 1.99	89	= 29.7%
2.00	- 2.99	31	= 10.3%
3.00	- 3.99	20	= 6.7%
4.00	- 4.99	14	= 4.7%
5.00	- 7.49	19	= 6.3%
7.50	- 9.99	4	= 1.3%
10.00	- 12.49	6	= 2.0%
12.50	- 14.99	1	= 0.3%
15.00	- 17.49	-	
17.50	- 19.99	2	= 0.7%
20.00	+	4	= 1.3%

Source: author's own calculations.

of 10.00 - 19.99 were said to exhibit Second Order Links. Twenty-three Third Order links of between 5.00 - 9.99 and 65 Fourth Order links of between 2.00 - 4.99 complete the full range of possibilities.

The Gross Mobility Indices have been mapped in Figures 3.6 and 3.7. The first map in Figure 3.6, which shows the distribution of First and Second Order links, demonstrates a number of interesting points. First, these high orders of spatial integration are best developed in the more remote, thinly populated and poorly serviced areas of Newfoundland. Secondly, and a corollary of the first point, the relatively thickly populated and well serviced Avalon Peninsula displays minimal high-order linkages -- the two that do occur are only marginally Second Order (10.02 and 10.10) and even then, the first of these is a link effected outside the Avalon: this is the more surprising as most Avalon districts are small in area, and 'migration' in the sense of 'boundary-crossing' might have been supposed to have been more common. Thirdly, and perhaps less surprising, all the linkages depicted are between contiguous districts.

The second map in Figure 3.6 depicts Third Order links. Contiguity in linkages is again widespread, but for the first time non-contiguous linkages become important. The Avalon Peninsula exhibits a moderate degree of internal integration, but perhaps the most striking feature of the map is the consistent pattern of association between the

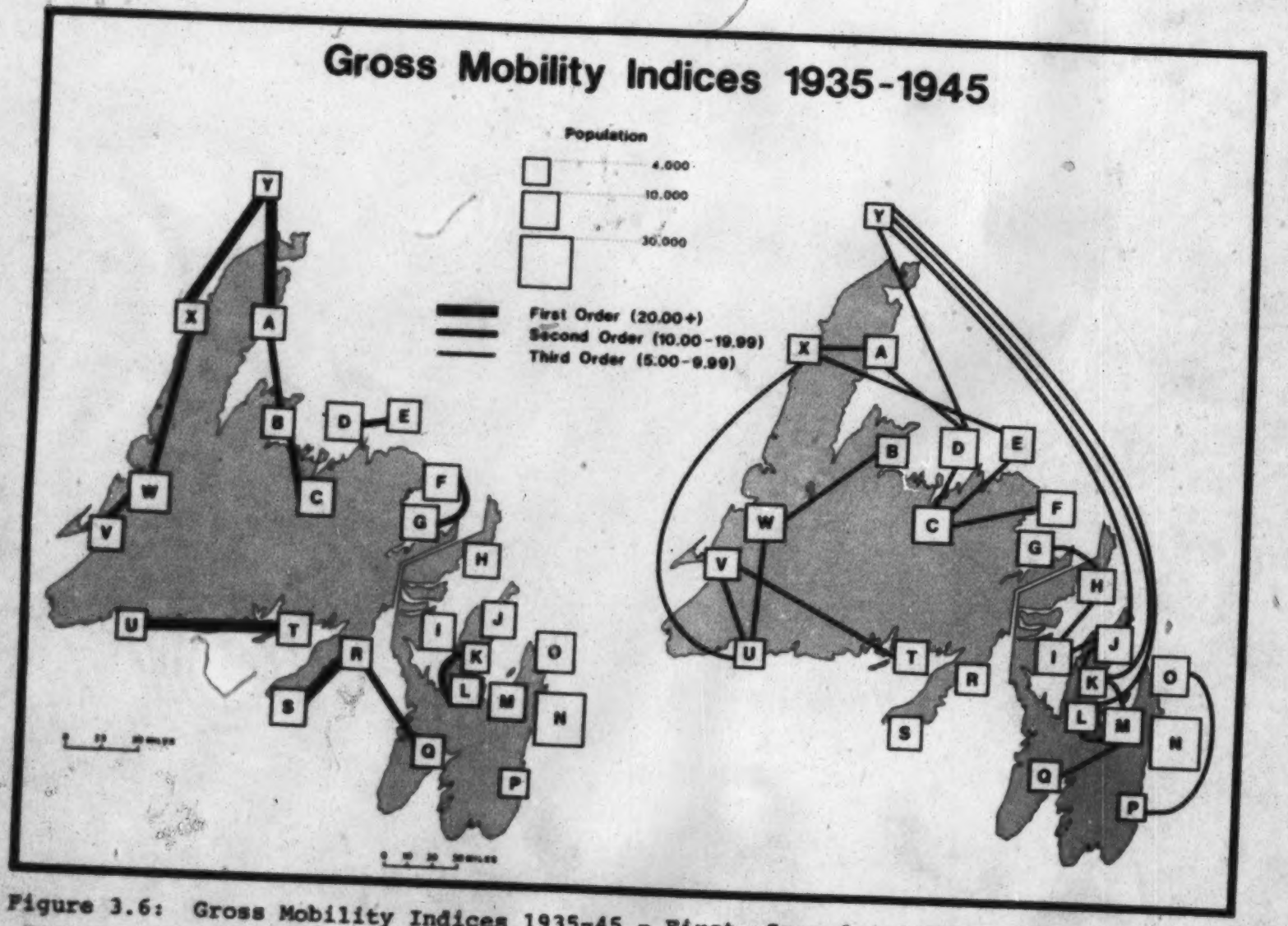

Figure 3.6: Gross Mobility Indices 1935-45 - First, Second and Third Order Links

Conception Bay districts and Labrador. Finally, the map demonstrates the paucity of substantial links between the South and West Coasts, and the North-East Coast, thus recalling the basic pattern demonstrated in the neighbouring map.

Fourth Order linkages are shown in Figure 3.7. The map is too crowded for any clear pattern to emerge but some general features become apparent. It is at this level, for example, that non-contiguous moves become dominant. Despite this, the flow patterns persist as mainly peripheral rather than cross-country. At the regional level, the Avalon becomes relatively strongly integrated; the North (particularly White Bay and Labrador) become attached by numerous strands to the North-East Coast and the Avalon; the emerging urban industrial centres of Corner Brook and Grand Falls develop far-flung links.

This analysis of the levels of regional integration may be further adapted to refine the definition of migration regions.

The Gross Mobility Indices derived above are arrayed in descending order the most important of which are given in Table 3.12.

This step completed, the most strongly integrated pairs of districts are combined and are regarded in future calculations as one district. This has the effect of removing their strong mutual influence from the analysis -- thus every reworking of the data offers each district the

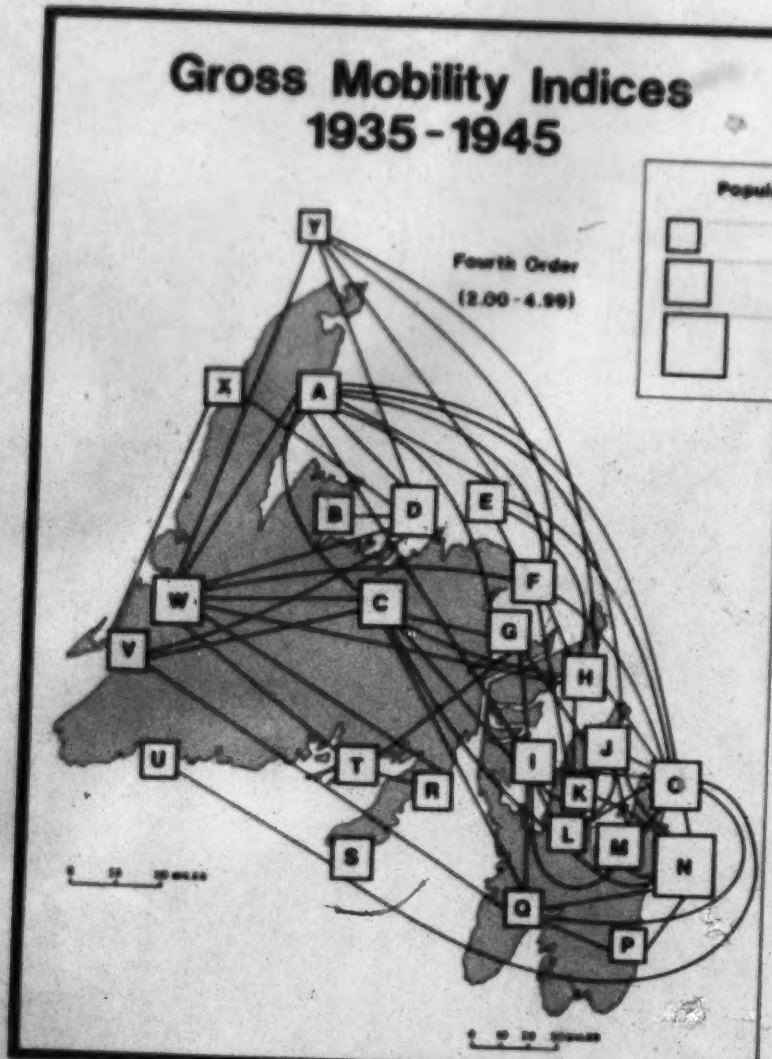

Figure 3.7: Gross Mobility Indices 1935-45 - Fourth Order

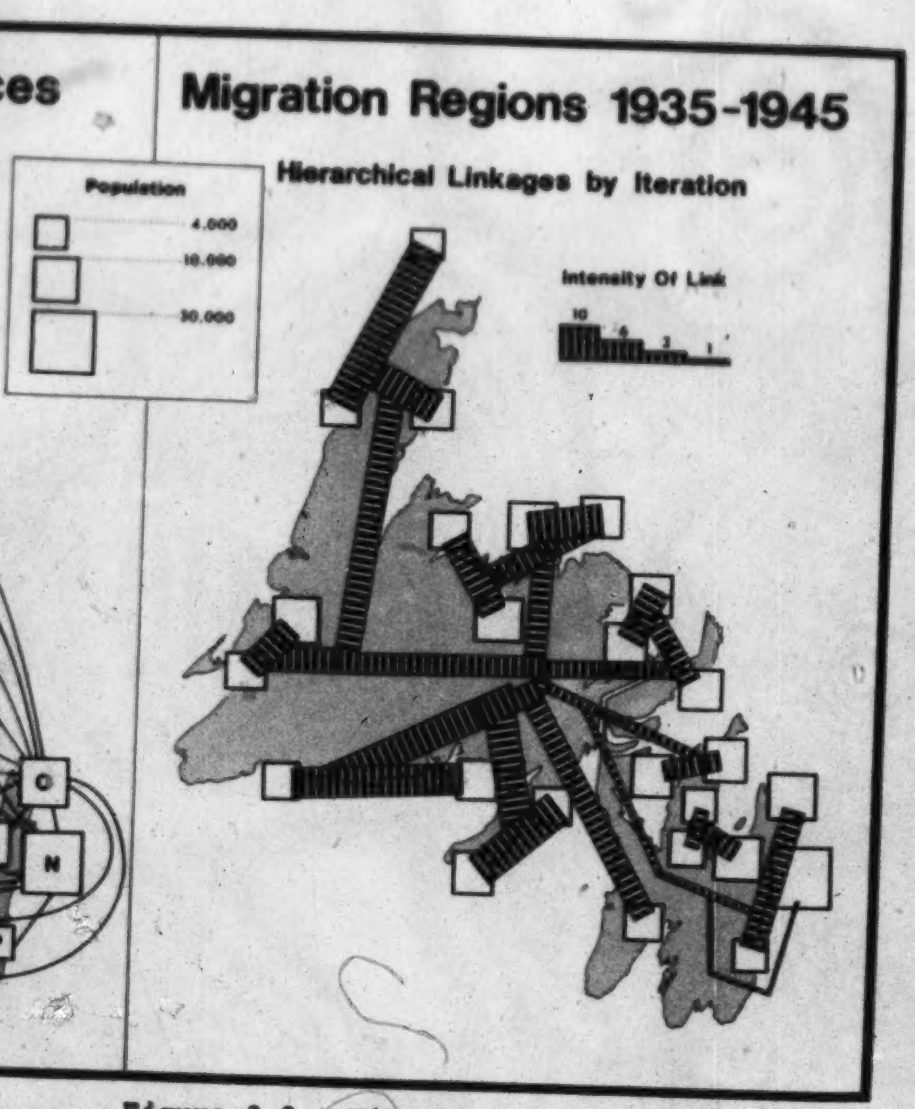

Figure 3.8: Migration Regions defined by linkage

TABLE 3.12: GROSS MOBILITY INDICES, NEWFOUNDLAND, 1935-45 (1st Iteration)

DISTRICTS	1st→2nd	2nd→1st	TOTAL
T-U	18.03	10.43	28.46
R-S	8.63	16.83	25.46
X-Y	3.96	21.07	25.03
A-Y	9.21	11.34	20.55
S-T	7.95	11.52	19.47
D-E	9.59	8.03	17.62
A-B	7.84	6.52	14.36
V-W	6.02	6.02	12.04
W-X	5.68	4.88	10.56

Source: Table 3.11; author's own calculations.

opportunity to demonstrate the strength of its linkages unaffected by previously established high-order links. In the examples given in Table 3.12, districts T and U combine to become TU, R and S combine to become RS, and X and Y join to form XY. The next highest Gross Mobility Index is between A and Y, but because Y has already been more strongly associated with X, the combinations are terminated and new mobility indices are derived for the redefined twenty-two districts in a second iteration.

The successive combination of districts exhibiting the strongest mutual association requires ten iterations to unite the whole of Newfoundland. The combinations are listed in Table 3.13.

From the data, it is possible to construct a map (Figure 3.8) demonstrating the level at which the various districts integrated. Thus districts integrating at the highest level, in the first iteration, were given a rating of 10. The lowest level of integration, occurring during the tenth iteration was rated 1. Bars proportional to these values were then drawn between the appropriate districts. So for example, X and Y combine during the first iteration, the resulting district XY combines with A during the second iteration. AXY is then linked during the fourth iteration with VW which was itself formed during the third iteration.

The resulting diagram gives a good visual impression of the level and direction of regional integration. The

TABLE 3.13: INTEGRATION OF MIGRATION REGIONS, by iteration

ITERATION	COMBINATION	GROSS MOBILITY INDEX
First	T-U = TU	28.46
	R-S = RS	25.46
	X-Y = XY	25.03
Second	D-E = DE	17.16
	RS-TU = RSTU	14.85
	A-XY = AXY	14.35
Third	V-W = VW	11.47
	F-G = FG	11.17
	B-C = BC	10.91
Fourth	BC-DE = BCDE	10.25
	K-L = KL	10.19
	P-O = PO	7.91
	AXY-VW = AXYVW	6.89
Fifth	KL-M = KLM	6.55
	AXYVW-BCDE = AXYVWBCDE	6.23
	FG-H = FGH	5.89
	I-J = IJ	5.70
	RSTU-Q = RSTUQ	5.56
Sixth	AXYVWBCDE-FGH = AXYVWBCDEFGH	5.29
Seventh	AXYVWBCDEFGH-QRSTU = AXYVWBCDEFGHQRSTU*	4.73
Eighth	A/U-IJ = A/UIJ	4.68
Ninth	A/UIJ-OP = A/UIJOP	5.28
Tenth	A/UIJOP-N = A/UIJOPN	4.33
	REMNANT KLM	

* now referred to as A/U.

Source: author's own calculations.

districts of the North and West Coasts (Region NW) stand out as fairly clearly grouped. So also do those of the South Coast (SC). The districts of the North East Coast (NE) tend towards integration but at a lower level and in a more disparate fashion than the districts in either NW or SC: some districts of the North-East Coast, for example F, G and H, integrate with the combinations of the North and West Coasts at a higher level than with other districts in their own region. The Avalon, as we have already seen, exhibits a low order of integration: moreover, it is itself divided -- St. John's East (O) and Ferryland (P) are moderately strongly integrated but the combined OP is then weakly integrated into the districts of the NE Coast. St. John's West (N) is even more tenuously linked into this system. On the other hand, the Conception Bay districts of Harbour Grace, Port de Grave and Harbour Main (K, L, M), though well linked among themselves, are left as a remnant in the pattern of progressive integration.[12]

Thus an analysis derived from measures of regional integration is complementary to the analysis of migration regions. In general, the migration regions previously defined are reflected in the later analysis, but the technique

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[12] This is a necessary result of the method whereby the districts are combined through successive iterations until only two 'districts' are left. Hollingsworth notes this tendency as a "degeneracy towards the end of the analysis". In the Newfoundland examples the degeneracy is not so marked as in Hollingsworth's Scottish data -- all but one of Newfoundland's districts had been combined into the analysis by the fifth iteration. See Hollingsworth, op. cit., p. 179.

of integration gives a more faithful picture of the degree of coherence characteristic of each region. To a considerable degree, this analysis gives additional dimensions(if not a mirror image) to some of the pictures painted, for example, in Table 3.9. Thus Region SC appears from Table 3.9 as the least likely internal migration region, with external (i.e. in and out) migration far exceeding internal movement. In Figure 3.8 this image is reversed, and no region is more coherent or better internally integrated. On the other hand Region AV appears from Table 3.9 to be dominated by internal movement. But on the basis of the analysis of integration, it is clear that, although moderately strong internal associations exist, these are selective, and the external links suggest fissile rather than integrated structures.

Summary and Conclusions

Most geographic studies on migration stress the volume and proportion of migratory flows and, clearly, the establishment of basic flow patterns is important to an understanding of the migratory process. In Newfoundland, during the period 1935-45, the simple flows described accord with generally accepted principles governing migration. Most moves were short distance (i.e. between contiguous districts) and there was a general propensity for females rather than males to migrate, though males moved farther. It may be noted that these two points are neither surprising

nor are they dissociated, for many female moves would be short distance moves, though over a district boundary, to contract marriage at the bridegroom's place of residence. This same female dominance in migration was noted in the migration structures -- despite widely differing absolute totals of migrants, most districts fell into one of three distinct categories of migration structure which were characterised by accordant sequences and proportions of migrants. These accordant sequences suggest that an ordered structure is an inherent property in migration, as distinct from migration being a random occurrence.

More significant is the attempt to group the districts of Newfoundland into migration regions: such 'regions' have been suggested by other writers as 'natural' areas of circulation. While the definition of such regions is feasible, this analysis has also indicated how such regions may be more properly defined, and with what qualifications they may be accepted. Perhaps the most important theme to emerge from this part of the analysis is that regions exist at different levels, or strengths, of integration: any supposition as to the permanence or immutability of these regions must take this factor into account.

CHAPTER IV

POPULATION DEVELOPMENT AND MIGRATION PATTERNS 1935-66

The vignette of Newfoundland's internal migration made possible by the direct data of the 1945 Census cannot be redrawn. After Confederation in 1949, the quinquennial censuses carried out by the Dominion Bureau of Statistics in the new Canadian province were substantially different from those of previous administrations both as to format and as to areal organization. For this reason, research into population movement for the more recent periods has to shift methodology, and the use of direct data is replaced by indices calculated according to the vital statistics method.[1]

The direct data of 1945 can be called into use for one last time however to help assess the validity of the succeeding vital statistics figures. To this end, net migration rates for the period 1935-45 were computed according to both methods, the correlation between the two sets of data being $r = 0.798$ $(n = 21)$. When the urban growth centres of St. John's, Grand Falls, Corner Brook and Stephenville, and the frontier region of Labrador were

[1] Bogue, D.J., in Hauser, P.M. and Duncan, O.D., The Study of Population, Chicago, 1959, p. 492.

eliminated from the calculation, the correlation for the more purely rural districts (n = 16) was r = 0.679. Both these figures are significant at the 99% confidence level. If it is accepted that the direct data on migration, though limited in amount, are the most accurate and useful,[2] the more readily available vital statistics data would still appear to fairly represent the scope and scale of internal migration.

Migration Levels 1935-66

The level of migration over this period however was far from constant. A useful index of the fluctuations can be found in the rate of net movement out of the province, the statistics for which are found in Table 4.1.

TABLE 4.1: NEWFOUNDLAND - PROVINCIAL NET MIGRATION 1935-66

	Total Net Migration	% of Mean Population	Average Annual Net Migration	Annual % of Mean Population
1935-45*	- 14,790	- 48.4	- 1,454	- 4.8
1945-51**	- 11,873	- 34.8	- 2,098	- 6.1
1951-56	+ 807	+ 1.0	+ 161	+ 0.2
1956-61	- 16,466	- 37.7	- 3,293	- 7.5
1961-66	- 25,540	- 49.5	- 4,708	- 9.9

* 10.17 years.
** 5.66 years.

Source: author's own calculations; Census of Newfoundland 1935, 1945; Census of Canada 1951, 1956, 1961, 1966

Net migration rose gradually from an average annual rate of -4.8% in 1935-45 to -9.9% in 1961-66. Only one of

[2] Ibid., p. 495.

the intercensal periods, 1951-56, failed to register an increased rate of out-migration. Instead, a slight net in-migration, averaging 0.2% per annum was recorded in this period. Given the limitations of the vital statistics computations,[3] such a small figure is in no way significant at its face value, but it is worth noting that it represents a clear reversal of the long term trend.

An explanation for this apparent net in-migration, or at least the cessation of increasing out-migration, has not been researched in detail. However, Levitt has associated the phenomenon with "certain growth elements in the economy connected with exploitation of forest and mineral resources and reflected in net in-migration to the areas where this activity was concentrated."[4] This reasoning may go some way towards explaining why out-migration apparently declined during the period 1951-56, but it may also be postulated that during this period, the benefits of Confederation became a significant influence militating against increased population mobility. If the migration figures for the individual districts are examined (Table 4.2) it will be seen that not only were the resource centres nominated by Levitt the recipients of net in-migration, but that out-migration from the other rural districts was more restrained than was usual for period as a whole. It may be postulated that this was due to the

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[3] Ibid, p. 492.

[4] Levitt, K., Population Movements in the Atlantic Provinces, Fredericton, 1960, p. iv.

blanket provision of Canadian Social Security benefits (particularly Old Age Pensions and Family Allowances) which, for the first time in Newfoundland's history, blunted the sharp edge of rural deprivation, thus diminishing the push of population out of the rural districts.[5] This cessation of net migration out of the province, and its associated slackening of population mobility, was however, only temporary. If the period 1951-56 is ignored and only the overall figures assessed, the general trend is towards increasing rates of migration from the province.

Spatial Variation in Net Migration Rates

The shifting levels of movement out of the province are paralleled by wide spatial variations in the rates of internal migration from and to the different electoral districts. These variations are recorded among the data of Table 4.2 and depicted in Figure 4.1.

The period 1945-51 shows a clear advance in the volume of population movement as compared with the previous decade. The pattern of net losses and gains, however, as distinct from the volume of movement, is not substantially changed. As in 1935-45, there were five districts recording

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[5] See Gwyn, R., Smallwood: the Unlikely Revolutionary, Toronto, 1968, p. 124: "within a month of the date of union, the three thousand pensioners who had been receiving the pre-Confederation pension of $18 a quarter increased to ten thousand who now received $30 a month. The average family allowance cheque for Newfoundland mothers was $16.38, the highest in the country." The old-age pension was raised, within a month of Confederation, to $40 a month.

TABLE 4.2: NET MIGRATION AND NATURAL INCREASE, NEWFOUNDLAND 1935-66

	Net Migration (average annual o/oo)					Nat Increase (average annual o/oo)				
	1935-45	1945-51	1951-56	1956-61	1961-66	1935-45	1945-51	1951-56	1956-61	1961-66
Newfoundland	- 4.8	- 6.1	+ 0.2	- 7.5	- 9.9					
1. White Bay	- 2.9	+ 3.0	- 2.4	- 8.8	+ 5.2	23.4	31.0	29.2	29.5	28.4
2. Green Bay	- 8.5	- 1.4	- 6.0	- 2.4	- 3.4	12.5	29.0	26.1	29.5	27.0
3. Grand Falls	+ 1.8	+33.6	+15.6	- 3.6	- 1.4	22.7	30.2	26.2	30.0	26.6
5. Twillingate	- 5.8	-17.5	-11.8	-12.2	- 9.6 -15.0	14.0	24.7	21.7	21.0	27.9 20.7
6. Fogo	- 8.2	-14.0	-16.8	-17.2	- 9.6	13.0	23.8	23.6	22.9	22.1
7. Bonavista	- 7.9	-28.4	-10.6	-11.2	-17.6	9.8	29.5	27.4	21.1	18.4
8. Trinity	-11.4	-26.9	+ 3.2	-14.6	-20.0	11.1	22.8	18.7	19.5	18.0
9. Carbonear-Bay de Verde	-14.3	-32.5	- 2.0	-16.8	-16.8	9.9	19.0	17.5	16.9	17.1
10. Harbour Grace	-16.6	-17.7	- 5.0	-10.0	- 9.6	12.5	22.9	23.2	20.1	17.6
11. Port de Grave	-11.7	-30.9	+10.2	-13.2	- 8.8	6.2	17.9	11.3	11.6	9.9
12. Harbour Main-Bell Island	- 3.9	- 7.6	+ 3.4	- 8.6	-33.0	19.2	31.4	28.7	28.1	22.9
13. St. John's	+ 2.3	- 1.8	- 0.8	+ 4.6	- 1.0	14.7	23.1	26.4	25.7	20.7
14. Ferryland	- 6.9	- 6.2	+1.6	- 8.2	- 7.4	1.8	21.5	17.5	20.9	19.6
15. Placentia-St. Mary's	- 5.8	-19.6	-11.8	-21.6	-28.2	11.4	29.1	34.3	34.9	32.6
16. Burin	-13.1	-24.7	+ 1.4	-10.2	- 6.8	15.6	23.9	22.5	23.1	22.1
17. Fortune Bay-Hermitage	-13.1	-15.2	-21.2	-15.6	- 6.4	14.0	26.0	24.4	26.2	24.1
18. Burgeo-La Poile	- 9.3	-12.0	- 3.8	-10.8	- 2.8	10.0	25.2	22.7	25.5	24.8
19. St. George's-Port au Port	+ 4.2	+ 1.8	- 5.0	- 7.4	-35.8	24.4	33.9	45.7	50.3	43.4
20. Humber	+ 3.6	+18.7	+10.8	-12.2	-10.8	26.2	33.7	33.6	32.2	27.7
21. St. Barbe	- 9.3	-14.5	+13.4	- 8.0	-13.2	21.1	33.4	29.8	27.1	29.3
22. Labrador	+ 4.0	+39.3	+36.6	+10.0	+46.6	11.5	23.0	25.9	34.7	41.9
Mean Out-Migration	- 9.3	-16.9	- 8.1	-11.2	-12.9					
Standard Deviation	3.7	9.0	6.1	4.5	9.1					

Source: author's own calculations.

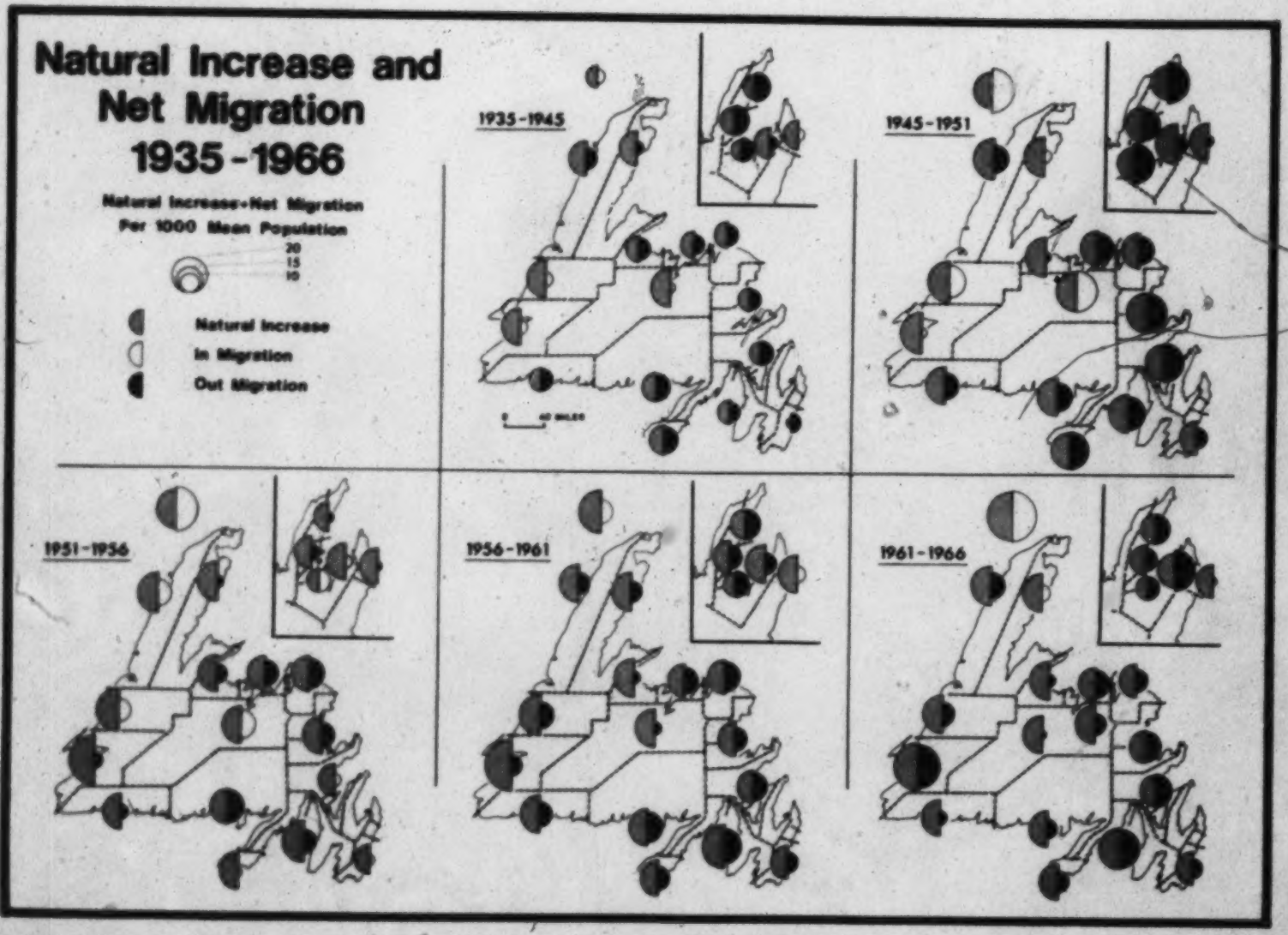

Figure 4.1: Newfoundland-Natural Increase and Net Migration 1935-66

net in-migration. Four of these five districts remained as foci of in-migration through the period 1945-51. To complement this pattern, the north-east and south-east coasts display high rates of out-migration, the major centres of transmission being in Conception, Trinity and Bonavista Bays. High levels of out-migration were also prevalent in Burin, and in Placentia and St. Mary's.

From 1951-56, the levels of out-migration dropped sharply and in-migration was recorded in nine of the twenty-one districts. The general reasons for this turn of events, unusual in the population geography of Newfoundland, have been discussed above, but examination of the distribution of net in-migration in Figure 4.1 suggests two further postulates. In the first place, the districts of net in-migration are largely concentrated, in number if not in volume of migration, in the Avalon Peninsula -- Ferryland, Harbour Main-Bell Island, Port de Grave, and Trinity. Levitt had noted this tendency for in-migration to concentrate on the Avalon, but, working with the grossly unsatisfactory Federal Census Divisions, was led to assume that since "Census Division 1 is the Avalon Peninsula...net in-migration there corresponds to the net in-migration to metropolitan St. John's."[6] In fact this assumption is almost certainly incorrect: the St. John's area was an area of slight net out-migration, and any in-migration was

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[6] Levitt, K., op. cit., p. 56.

directed to the Avalon's rural districts. In a period of post-Confederation euphoria, the government of the day had begun a programme of industrial development much of which was directed at the rural districts around Conception Bay:

> "a leather tannery was announced on July 6, 1951; fur dressing, dyeing and leather goods plants on July 8; a textile plant on August 10; a heavy machinery plant on September 21 ..." Smallwood harboured no doubts. "We'll dot Conception Bay with factories", he told a press conference..."[7]

In addition, underlining this admittedly halting emphasis towards rural industry, much of the old established secondary manufacturing capacity of St. John's withered and died when exposed to Canadian competition.[8] Thus, it was in the rural districts that labour force gains were made. This tendency should not however be over-emphasised: most of the industrial development was short-lived and by 1957 had failed, or "as small, high-cost, low-wage operations, struggled on".[9] But given the limited economic horizons to which rural Newfoundland was accustomed, this phase of development, at least helped to stem and temporarily reverse the outflow of rural population.

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[7] Gwyn, R., op. cit., pp. 148-49; see also p. 150.

[8] Pushie, G.F., "Industrial Development since Confederation", in Smallwood, J.R. (ed.), The Book of Newfoundland, St. John's, 1967, Vol. 3, p. 467.

[9] Gwyn, R., op. cit., p. 168.

A second rationale for this unusual reversal of a general trend is one that has been almost completely overlooked in previous analyses. It is that the districts exhibiting in-migration were those of traditionally low-fertility and advanced age-structure.[10] For example, throughout the decade 1935-45, Port de Grave and Ferryland had experienced such low fertility that they were barely able to replace their populations, and in some years a natural decrease was recorded as is shown in Table 4.3.

TABLE 4.3: NATURAL INCREASE AND NATURAL DECREASE SELECTED DISTRICTS, 1935-40

	Port de Grave			Ferryland		
	Births	Deaths	NI/ND*	Births	Deaths	NI/ND
1935	132	147	- 15	107	109	- 2
1936	110	160	- 50	86	73	13
1937	185	139	46	90	103	- 13
1938	143	135	8	101	74	27
1939	192	130	62	76	80	- 4
1940	210	144	66	88	107	- 19
Totals	972	855	117	548	546	2

* NI/ND = Natural Increase/Natural Decrease

Source: Vital Statistics, Annual Reports, 1935-40, Department of Health, Province of Newfoundland.

As a result of these low levels of natural increase and fertility through the period 1935-40, the districts most affected had a diminished proportion of entrants to

[10] See Chapter II, Table 2.3

the labour-force in the period 1951-56 and this, together with the modest expansion in rural industrialisation, helps to account for the phenomenon of rural in-migration. By the same token, the period 1930-40 saw a general diminution of fertility, and this too helps to explain the reduction in rates of out-migration in districts untouched by any positive economic development.

By 1956 the situation was changing and from 1956-61 there was a reversion to the more traditional pattern of widespread out-migration. Only two districts, Labrador and St. John's witnessed net in-migration during this period, but in the other districts, the levels of out movement were generally less than they had been ten years previously. This was particularly true of the districts in Conception, Trinity and Bonavista Bays which had borne the brunt of the post-war losses. During this period the losses were more evenly distributed and even the urban-industrial districts of Central and Western Newfoundland recorded their shares.

The trend resumed in 1956-61 was continued with modifications through 1961-66. Again, only two districts recorded net in-migration, Labrador and White Bay, each the focus of resource development projects. The most marked differences from the established pattern occurred in the districts of St. Georges-Port au Port and Harbour Main-Bell Island. In each of these districts, the major agency of employment scaled down its operations and finally closed

in 1966.[11] In Placentia and St. Mary's, a heavy outflow can be attributed in part to the depopulation of the numerous islands in Placentia Bay under a Federal/Provincial Government Resettlement Programme and the diminution of activity at the United States Armed Forces Base at Argentia, near Placentia. These three districts apart, however, the heaviest losses were again sustained in the bays of the north-east coast.

The general trends throughout the period 1935-66 are summarised in Figures 4.2 and 4.3 which depict the degree to which each district displaying migration losses deviated above or below the mean level of net out-migration. The units of measurement are standard deviations computed from the data for each intercensal period. For the sake of clarity, districts of net in-migration are not shown. The pattern emerging demonstrates that the eastern half of the island is dominated by positive deviations i.e. has more than the average rate of out-migration. The eastern and southern coastlines, from Twillingate to Fortune Bay constitute a zone in which out-migration was consistently above average. In no district was this true for all inter-censal periods, but in Twillingate, Trinity, Carbonear-Bay de Verde and Placentia and St. Mary's, four of the five periods recorded positive deviations. In Bonavista, Port de

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[11] The United States Air Force Base at Harmon Field, Stephenville, Port au Port District, and the Dominion Steel and Coal Company (DOSCO), operators of the iron mines on Bell Island.

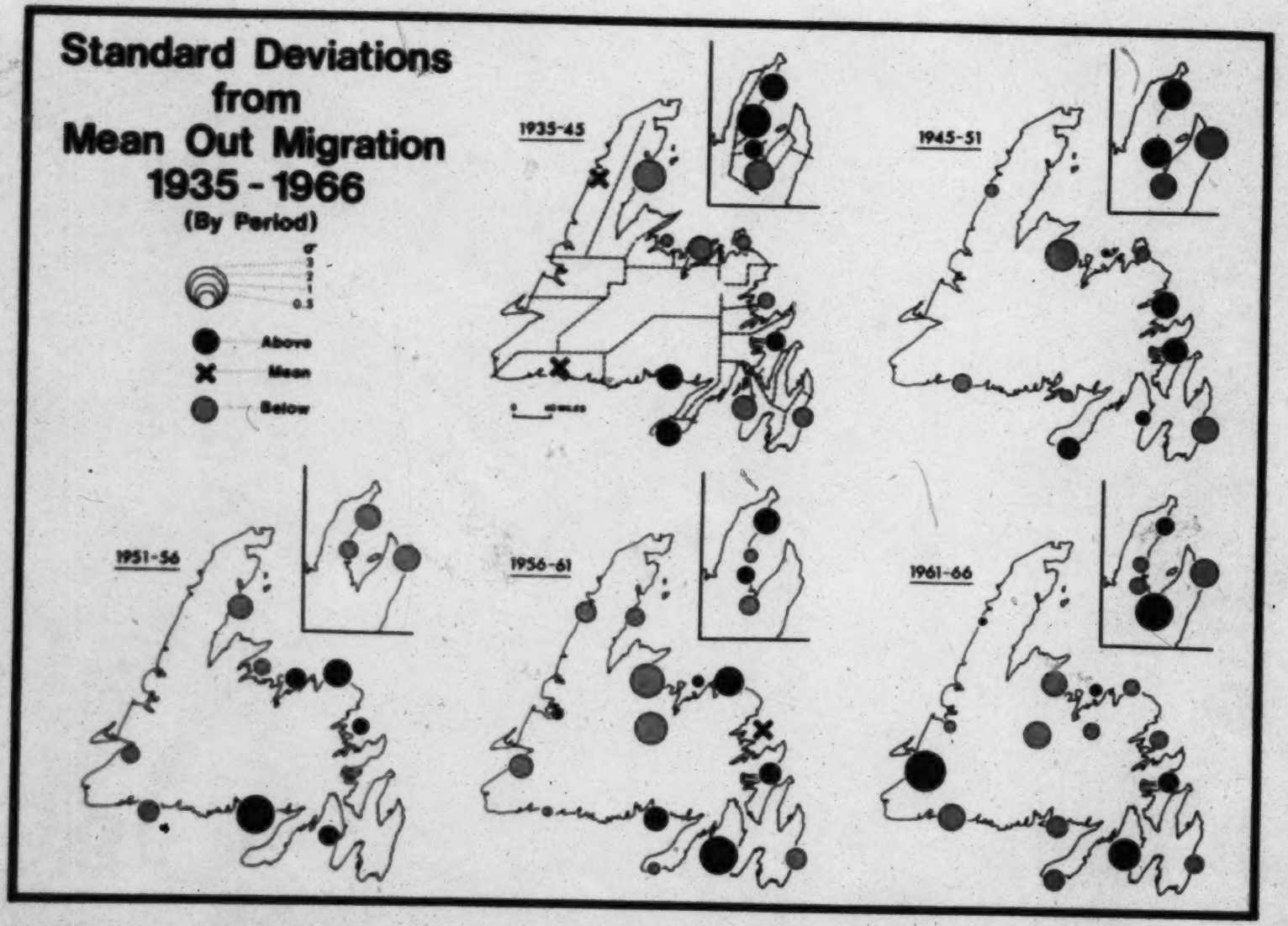

Figure 4.2: Standard Deviations from Mean Out Migration (by period) 1935-66

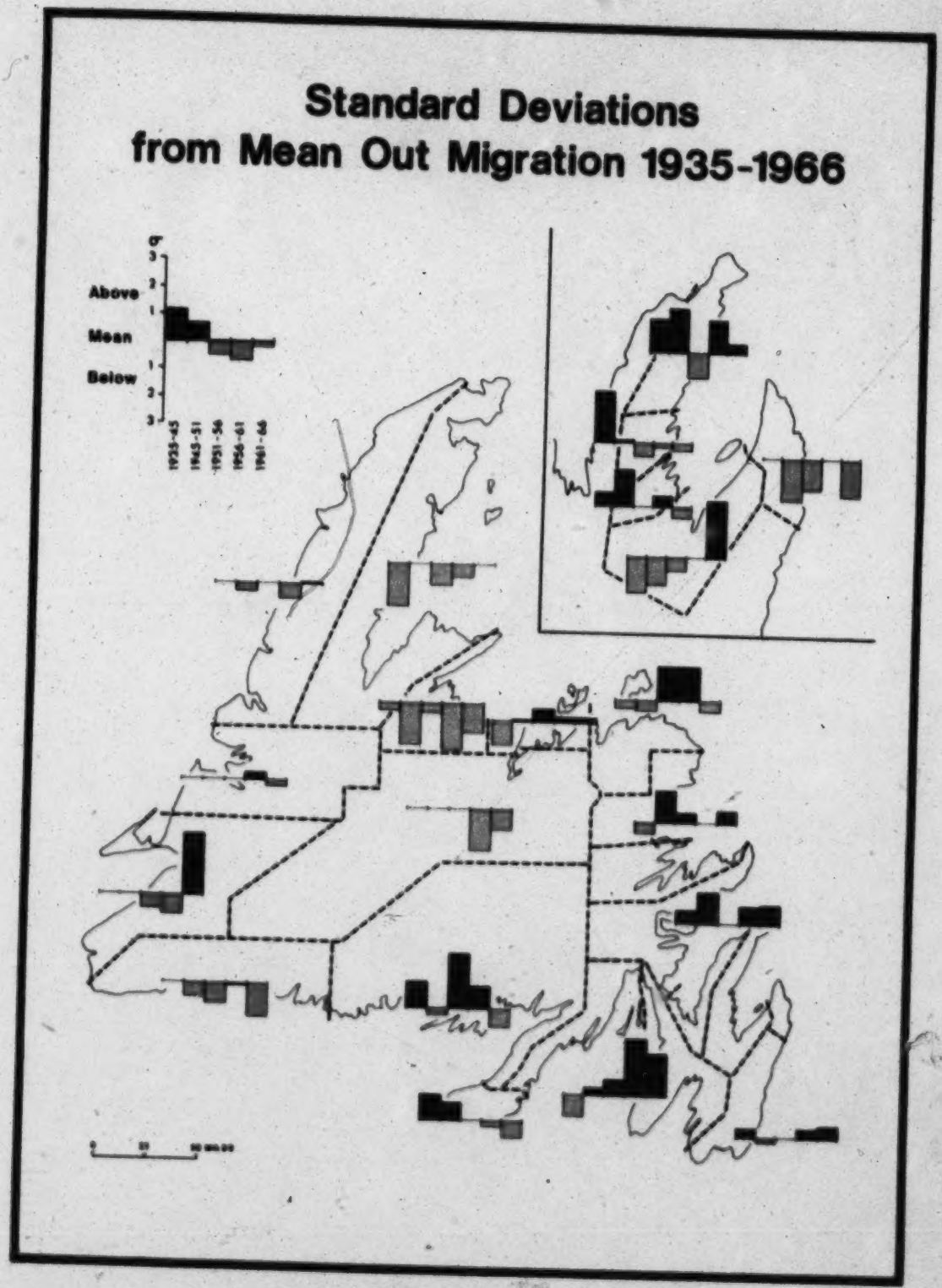

Figure 4.3: Standard Deviations from Mean Out Migration (by district) 1935-66

Grave, Ferryland and Fortune three positive deviations are shown. West of a line from Twillingate to Fortune only one significant positive deviation occurs, the 1961-66 out-migration from St. George's-Port au Port noted previously.

Figure 4.4 groups the data on migration rates to show a more comprehensive view of the relative progress of population movement. The rates of movement for each district were accumulated and plotted to give a simple graphic impression of the direction and intensity of net migration. Thus the curve for Placentia and St. Mary's shows heavy and increasing out-migration, while that for Labrador shows an accelerating in-migration. Most of the curves are of the Placentia and St. Mary's type, though there are individual deviations, not infrequently associated with the slight net gains of 1951-56. But in general the zone from Twillingate to Fortune displays a reasonable homogeneity of sustained out-migration. Ferryland and St. John's are the only exceptions to this rule, Ferryland differing in degree and St. John's in kind. The other purely rural districts, St. Barbe, White Bay, Green Bay and Burgeo-La Poile also approximate to this general model, though in less marked degree. St. George's-Port au Port, Humber and Grand Falls are substantially different.

The districts so distinguished for 1935-66 accord well with the divisions made according to mobility structure for the period 1935-45.[12] There is a clear if unsurprising

[12] See Chapter III, Figure 3.3 and Tables 3.2 and 3.3.

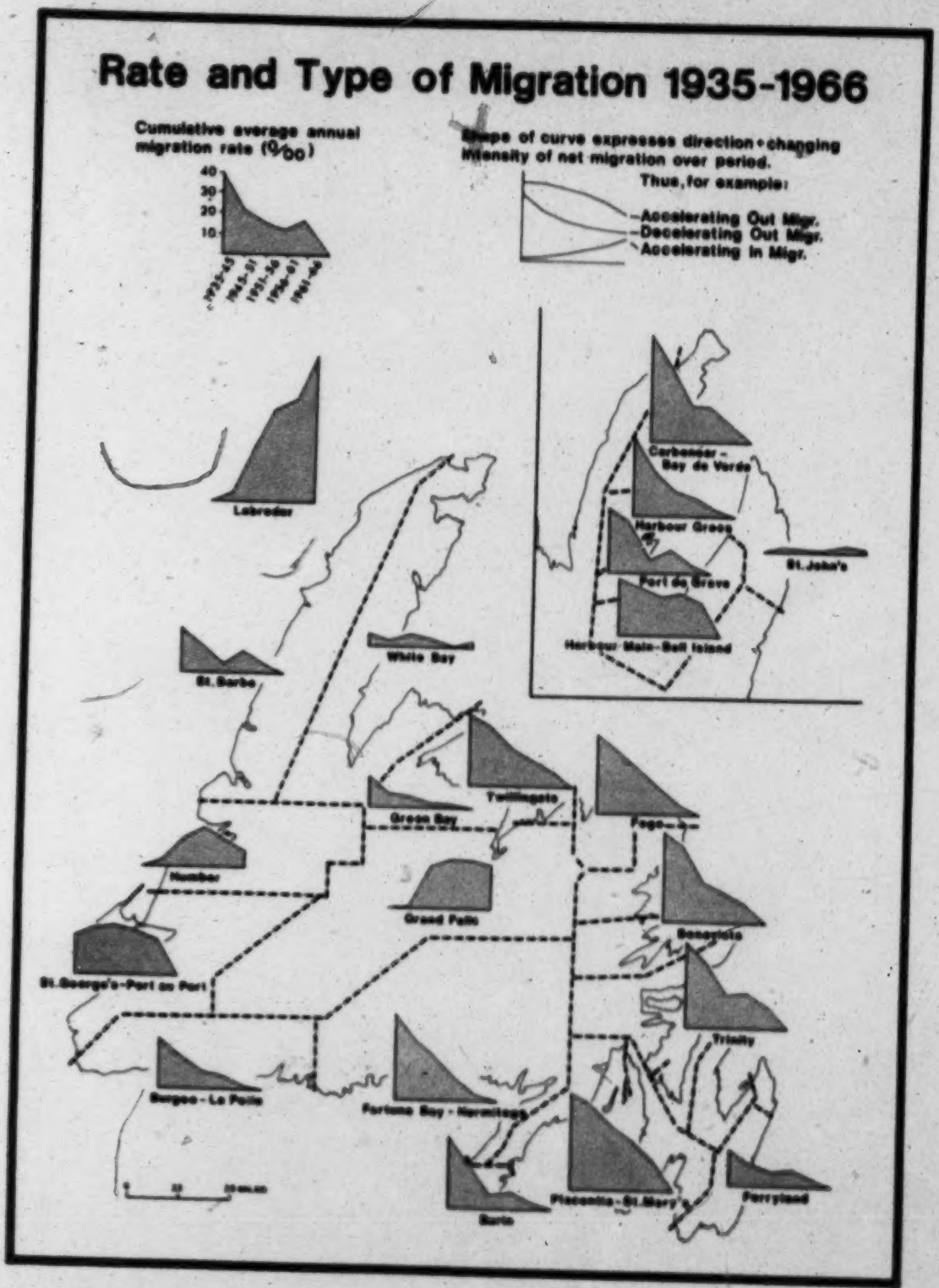

Figure 4.4: Rate and Type of Migration 1935-66

grouping of rural districts on the one hand, and a set of urban or quasi-urban districts on the other. The groups are distinguished by their tendency towards sustained migrational losses in the first case, and irregular gains and losses in the second. Only Labrador exhibited sustained migrational gain. This distinction will be of practical taxonomic significance at a later point.

Migrational and Natural Increase Components in Population Development

Despite widespread out-migration, the populations of most districts continued to grow because of the prevalence of high rates of natural increase. In order to emphasise this other, vitally important, component in population development, the district levels of natural increase have been recorded in Table 4.2 and plotted on Figure 4.1.

Some writers have utilised these kinds of data to develop a typology of population change by which population units (e.g. districts) may be grouped according to similarities in the combined components of their demographic development.[13] Naukkarinen has extended this methodology to examine shifts in these components through time.[14]

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[13] See, for example, Kirk, D., Europe's Population in the Interwar Years, Geneva, 1946, and Webb, J.W., "The Natural and Migrational Components of Population Changes in England and Wales 1921-31", in Economic Geography, Vol. 38, 1963, pp. 130-48.

[14] Naukkarinen, A., "Population Development in Northern Finland 1950-65", in Nordia, No. 8, 1969, pp. 1-149.

Since a degree of pattern had become apparent in the spatial variation of migration, this methodology was adapted and applied to the Newfoundland data to see whether there existed any regular cycle in which the population structures developed through time. The twin components of population change, net migration and natural increase, are plotted in Figure 4.5. The five inter-censal values for each component were averaged for each district, and the results plotted on a simple co-ordinate graph. The distribution shown reflects the grouping previously noted in Figures 4.2 and 4.3. The rural districts are concentrated in Sector A which denotes that natural increase exceeds net in-migration, but the heaviest grouping is inclined towards the boundary with Sector H in which net out-migration is greater than natural increase.

Naukkarinen has adapted this static model to show how such distributions may shift through time.[15] By plotting the distribution of the two components for consecutive intercensal periods, he suggests certain sequences which he considers basic to what he calls "a theory of population development characteristic of Northern Finland and thus of fringe settlement areas in general".[16]

Naukkarinen postulated that settlement and population development should follow a regular and logical sequence which he summed up on the diagram reproduced in Figure 4.6.

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[15] Ibid., pp. 108-16.

[16] Ibid., p. 115.

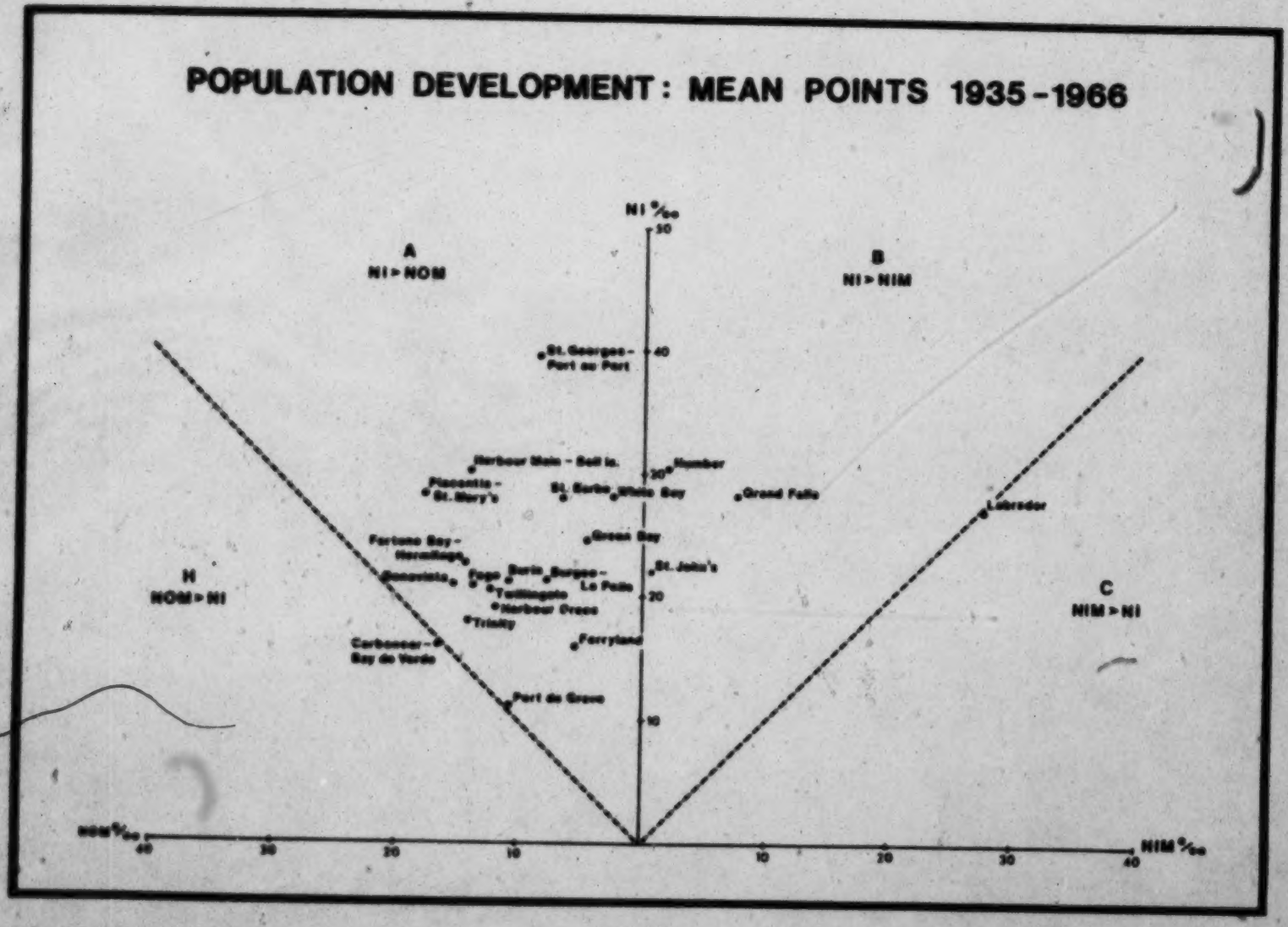


Figure 4.5: Population Development in Newfoundland - Mean Points 1935-66

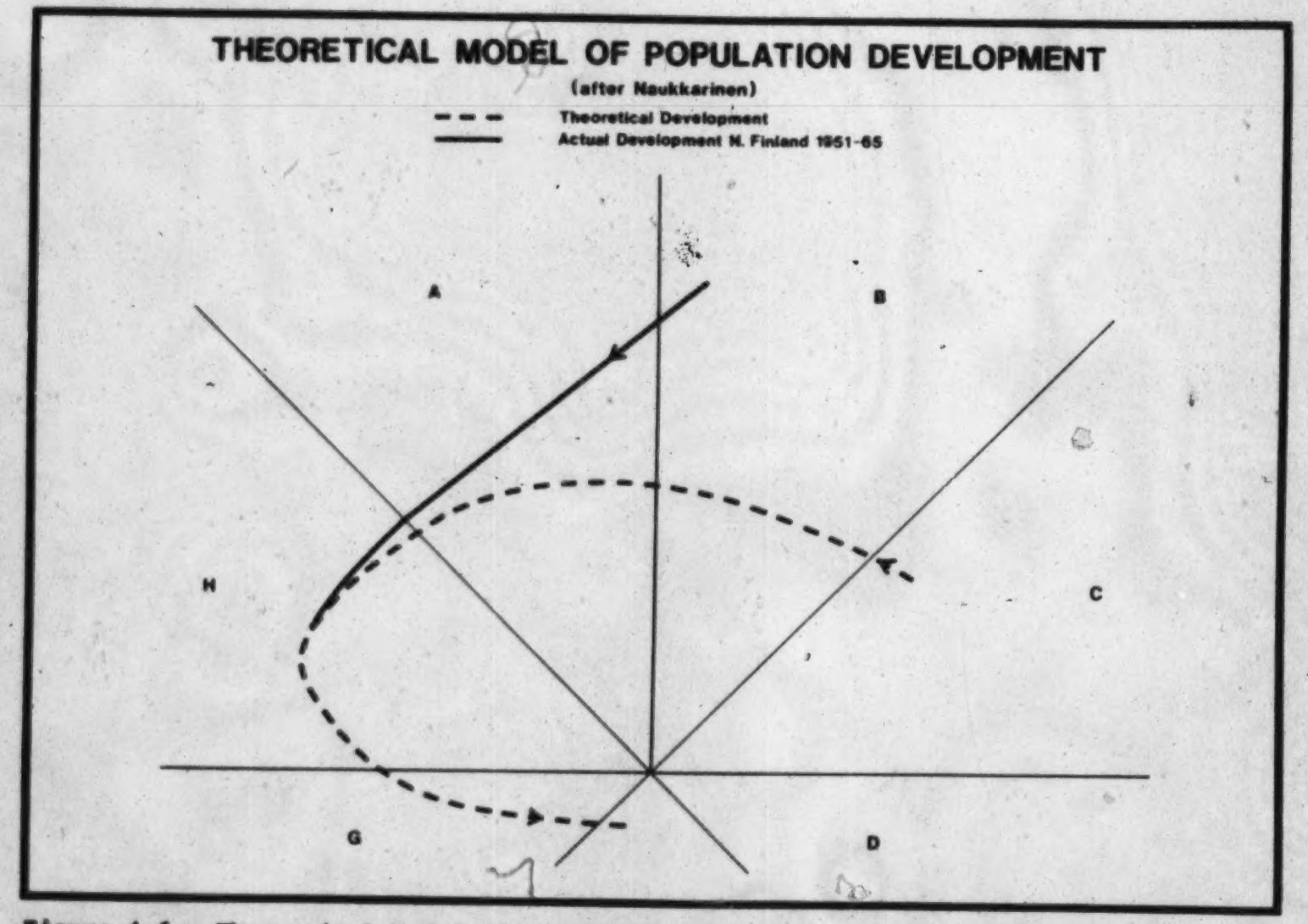


Figure 4.6: Theoretical Model of Population Development (after Naukkarinen)

During the initial settlement of a region, the components of population increase should intersect in Sector C of the model, indicating a condition in which net in-migration is greater than natural increase. The growth of a settled population and the slackening of in-migration would be represented by a shift from Sector C to Sector B as natural increase grew to exceed net in-migration. In the third stage of development, population would grow at a rate more than sufficient to fill all available niches in a spatial-economic system functioning at equilibrium: some relief from surplus population would derive from a developing net out-migration, but still, in this third phase, natural increase would exceed net out-migration. At a later stage however, in Sector H, net out-migration would begin to exceed natural increase, and the logical sequence is continued through Sectors G and D.

The empirical studies conducted by Naukkarinen in Northern Finland are represented on the diagram by a solid line which complements the curve of theoretical population development. This line representing the Northern Finnish experience deviates widely from the theoretical norm at its beginning in Sector A but joins the expected line in Sector H.

There are of course difficulties in the wholesale acceptance of such a theoretical model, not least being the fact that, as Naukkarinen admits, empirical support for the hypothesis is limited, particularly in the initial

and final stages of the model. To further test the model therefore, the data for the districts of Newfoundland were applied and plotted, period by period, in Figure 4.7. Though shifts in the distributions are perceptible, it is far from evident that these shifts represent any clear trend in conformity with the theoretical proposition.

When the mean points (centres of gravity) for each distribution are plotted however as in Figure 4.8 more regularity becomes apparent.[17] From the point labelled 9, representing the position in 1935-45, the graph rises sharply to point 10 (1945-51), a shift corresponding to the rise in natural increase following 1945. It then shifts sharply to the right to point 11 (1951-56): this shift corresponds to the decline in out-migration previously noted for this period. But for 1956-61 and 1961-66 (points 12 and 13) the line returns close to the position assumed by point 10.

In order to gain more perspective on the pattern, or lack of pattern, generated by this exercise, further plots were made of data for each district from 1857-1921 (points 1-7). Here we see the first clear indication of conformity with the theoretical norm as the graph line moves unambiguously from point 2 (1869-74) to point 4 (1884-91) in the direction postulated by Naukkarinen. It then however reverses its direction to point 5 (1891-1901), near which it remains for the periods 1901-1911 and 1911-1921 (points 6 and 7). It is from this zone of the graph that

[17] Data taken from Chapter II Table 2.5; the data for point 8 (1921-35) are not available because of boundary changes.

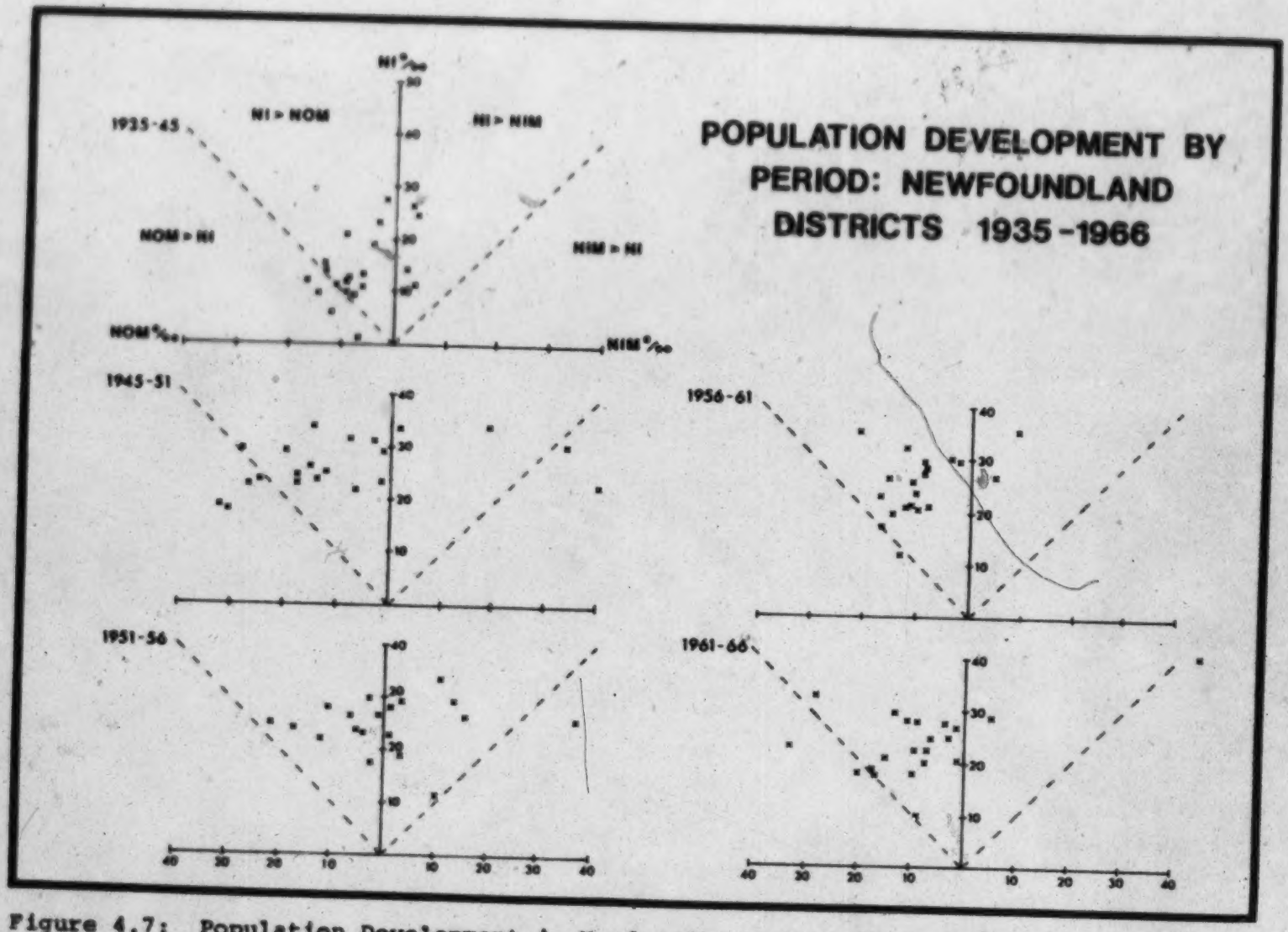
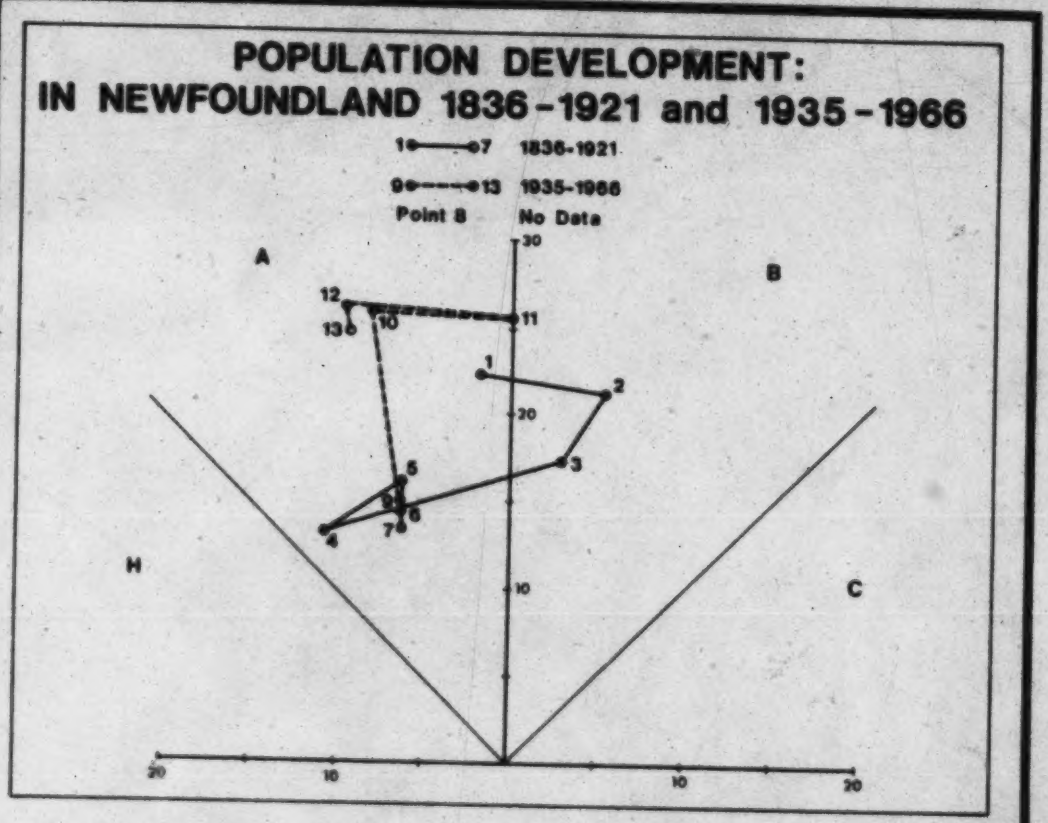


Figure 4.7: Population Development in Newfoundland (by period) 1935-66

Figure 4.8: Population Development in Newfoundland 1836-1921 and 1935-66



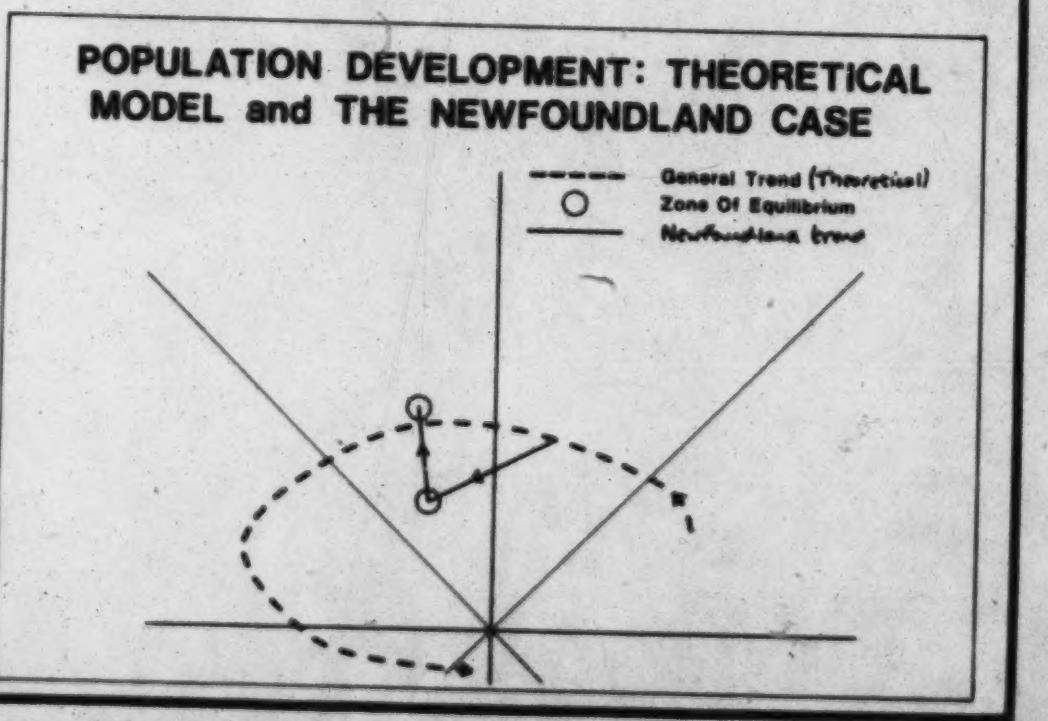


Figure 4.9: Population Development: Theoretical Model and the Newfoundland Case

the next available data, for (1935-45), expressed in point 9, makes its departure.

The empirical irregularities of the diagram have been generalised in Figure 4.9. Two points seem to be worthy of emphasis. Down to 1891, population development in Newfoundland shifted in conformity with the theoretical postulates. But from 1901-45 this shift was halted and an era of stagnation, or perhaps, more accurately, stillstand or equilibrium set in. The period 1945-51 witnessed a sharp deviation away from the zone previously attained, to a new zone of equilibrium from which the departure to point 11 (1951-56) was merely an aberration. The theory of regional demographic development therefore does go some way towards explaining shifts in Newfoundland's population development, but in the twentieth century levels of stillstand or equilibrium have been more characteristic than has a pattern of linear evolution. Thus, although outmigration has persisted as a powerful component in Newfoundland's population geography, it has been matched usually by a natural increase which balanced, or perhaps gave rise to, the losses.

The Causes of Out-Migration

This last thought prompts a series of fundamental questions as to the causes of the characteristic outmigration. What condition, or combination of conditions, best explains the spatial and temporal variations in outmigration? Can one single causal factor be held to account

for the majority of migration? Are the causal factor or factors constant through time or do they change from period to period? And are there districts which habitually differ in the explanation of their migration losses from those explanations generated for the general pattern?

In order to seek answers to this series of questions, the data on net migration for the fifteen districts which habitually displayed a pattern of out-migration were tested by multiple regression against a set of independent variables. The aim was to deploy the same set of independent variables throughout the period 1935-66 to explain the underlying causes of migration, while at the same time measuring the degree of change or continuity in the causal factors.

To this end, the dependent and independent variables were run through a multiple stepwise regression model which had the capacity of forcing variables into the regression in other than their natural sequence. The dependent variable was the rate of net migration (NETMIG), taken from Table 4.2, for each of the fifteen districts characterised by persistent out-migration. Independent variables, described below, were taken for three of the five intercensal periods, 1935-45, 1945-51 and 1961-66. The data for 1935-45 and 1945-51 were taken from the published census tables for 1935 and 1945 respectively and from unpublished data in the Provincial Archives. The 1961-66 data were aggregated to the district level from unpublished enumeration area data of the 1961 census and from published reports

of the Provincial Government. Unfortunately, no variables could be developed for the periods 1951-56 and 1956-61 as data were not available.

Initially, twenty-two independent variables were developed but this number was reduced by nine after preliminary analysis because of problems of multicollinearity. For the purposes of description, the thirteen remaining variables may be grouped roughly under the three headings of Economic, Demographic and Locational.

The six independent variables in the Economic category were those which measured the spatial variation of such factors as labour force, occupational structure and income. For example, it was hypothesised that poverty and deprivation would be a powerful stimulus to out-migration, therefore poverty (POVERT) was measured as the percentage of the population/months spent on able-bodied relief (welfare) in each district. Although this cannot be assumed to measure a level of absolute poverty, it gives a reasonable measure of the incidence of deprivation i.e. the degree to which people were forced to live at minimal levels of sufficiency.

Income was more easily measured, the figures taken being those of the average income of the working population at the beginning of each period in each district: these average incomes were designated AVINMA and AVINFM for the male and female labour force respectively. The labour force was similarly measured at the beginning of each period

and expressed as a percentage of the population in each sex: these surrogates were designated LAFOMA and LAFOFM. Finally, in recognition of the significance of the fishery to rural Newfoundland, a measure was sought of the size of the population engaged in fishing: this was expressed as the percentage of the male labour force engaged in catching and curing fish and was designated MLFFIS.

The variables selected to measure Demographic phenomena may be categorised under the headings of age-groupings, marital status and fertility. As age is universally recognised as a powerful factor in the explanation of migration levels, two groups were designated to see how far variations in age would contribute to the explanation of Newfoundland migration. These groups, designated GP1524 and GP2534, were measured as the percentage of the total population in the categories 15-24 years and 25-34 years.

It was also hypothesised that marital status would be positively associated with migration insofar as the proportion of the population single would prove to be more footloose than the married portion. The percentage of the population single[18] and of working age i.e. above the age of 15 years, was measured and designated SIN15+. To complement this figure, note was also taken of the degree of balance between the sexes in the category SIN15+: this

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[18] The designation 'single' here implies 'unmarried' and does not include the categories of 'widowed' and 'divorced'.

factor was expressed as the ratio of single males to single females over 15 years and was designated 'single male ratio' (SIMARA). Finally, the contribution of fertility levels to migrational differentials was assessed. It was hypothesised that migration in any period would be positively associated with fertility levels some 15-20 years previous to the period being considered, but negatively associated with fertility during the period under consideration. Previous levels of fertility for the various periods were assessed either by use of the child-woman ratio, or by the mean crude birth rate measured over the appropriate five year span. Thus CWR21, MCBR2631 and MCBR4045 designate these earlier fertility levels for the periods analysed. Similarly, CWR35, CWR45 and CWR61 designate fertility levels at the beginning of each period analysed.

Only one surrogate was used to measure the effects of location on the spatial variation of migration, as of all the indices experimented with, these showed the highest degree of interdependence. Thus of the three surrogates initially tried (average distance to nearest urban growth centre, population potential of the nearest centre, total population potential of all urban growth centres), only the last of these, designated TOTPOT, was used in the regression analysis. Urban growth centres were defined as those districts dominated by urban population and exhibiting at least periodic in-migration between 1935-66: there were four such districts, St. John's, Grand Falls, Humber and St. George's-Port au Port. Distances between the rural districts and these centres were measured

in miles according to the system of road, rail or water transport appropriate to the period under consideration.

Simple Linear Regression

The degree to which net migration may be explained by the foregoing variables may be assessed from an examination of the simple correlations represented in Table 4.4.

TABLE 4.4: CAUSES OF OUT MIGRATION: SIMPLE LINEAR REGRESSION

	1935-45	1945-51	1961-66
POVERT	- .634*	- .230	- .086
AVINMA	.111	- .112	- .052
AVINFM	- .435	- .286	- .270
LAFOMA	.708**	- .134	- .144
LAFOFM	- .208	- .636*	- .306
MLFFIS	.438	.607*	- .064
GP1524	- .442	.026	.276
GP2534	.420	.644**	.428
SIN15+	- .051	.032	- .225
SIMARA	.629*	.597*	.070
CWR(past)	.363	.227	.259
CWR (present)	.377	.643**	.195
TOTPOT	- .314	- .309	- .347

Significance Levels: *95% - .514; **99% - .641.

Source: author's own calculations, data derived from categories described in Appendix 1, see note in App.

It is immediately apparent that few of the correlations are high: of the thirty-nine figures computed for r only eight are significant at the 95% level and of these only three at the 99% level. Perhaps more striking, all the significant figures are grouped within the first two time periods, and, apart from the variable SIMARA, no single

variable is significant over both these periods.

Of the significant variables, the size of the male labour force (LAFOMA) appeared to be most closely associated with migration levels during the period 1935-45: as participation in the male labour force declined, so migration rose. Similarly, as deprivation (POVERT) increased migration rose, and, perhaps curiously, as the single male ratio (SIMARA) declined, out-migration again tended to rise. The explanation of this partially unexpected phenomenon may lie in the migration structures calculated previously in Table 3.2: districts characterised by a low SIMARA (i.e. a relatively small surplus of single males) owed this to the fact that they had above average male out-migration. Thus low scores for SIMARA implied above average migration levels for both females and males rather than low migration levels arising from a more balanced population.

By contrast the most significant levels of association for the period 1945-51 were with the age-group 25-34 (GP2534) and with current levels of fertility (CWR45). The relationship of the age-group with migration level was positive, in that migration rose with an increased proportion of population aged 25-34. The high but negative relationship between fertility and migration (low fertility matching high migration) may be seen as a converse of the association between migration and age-group.

The correlation between elements of the labour force and migration was more complex in 1945-51 than in the

previous period: the size of the male labour force (LAFOMA) appeared insignificant as a motivating factor, but instead the size of the labour force engaged in fishing (MLFFIS) had a strong negative relationship with migration. As the proportion of the male population engaged in fishing decreased, migration levels rose indicating that the fishery, held in the conventional wisdom to be the focus of rural decay and depopulation, could in fact function as a force of relative stability and holding power. The female labour force however (LAFOFM) this time registered a strong positive relationship indicating perhaps that increased employment opportunities for female labour was a powerful stimulus to out-migration.

As has been noted above, the period 1961-66 showed none of the selected independent vafiables as having a significant correlation with migration levels. The highest correlation (.428) was with GP2534 but this was far below acceptable significance levels. No other variable approached even this low level. The reasons for this sharp discontinuity in the apparent causes of out-migration however are not immediately apparent, but given the limitations of the simple regression, no inferences will be drawn until a more thorough analysis has been made.

The Multiple Stepwise Regression

To test more accurately the causes of out-migration, the variables were run through a series of multiple stepwise

regressions. Initially the data for each of the three periods were run to establish the sequence and power of the explanatory variables compared from period to period. Following this, the five or six most powerful variables were re-run as a basic explanatory model and the residuals computed to assess the unexplained variation. Thus 'basic' models were developed for all three periods. In addition, the basic model for 1935-45 was redeployed as a 'standard' model and this standard model was applied to the data of the succeeding periods. This procedure was intended to give a rough quantitative assessment of causal change i.e. the degree to which the standard model failed to explain later levels of movement.

The Basic Models

In the period 1935-45 six of the thirteen independent variables accounted for 84.5% of the variation in the levels of net out-migration, the two most important variables alone accounting for 64.9% of the variation. The sequence and explanatory power of the variables elicited by the regression are contained in Table 4.5

A most striking phenomenon of the table is that two of the three variables seen to be significant as explaining migration levels in simple regression do not contribute significantly to the explanation when all the variables are weighed together. Instead migration is assessed as being a response largely to economic indices such as

labour force and income, and the influence of urban growth centres.

TABLE 4.5: NET MIGRATION 1935-45: EXPLANATORY VARIABLES IN BASIC MODEL

Step Number	Variable	R	R^2	Increase in R^2
1	LAFOMA	.7080	.5013	.5013
2	TOTPOT	.8057	.6492	.1479
3	LAFOFM	.8364	.6996	.0505
4	GP1524	.8582	.7365	.0369
5	SIN15+	.8819	.7778	.0412
6	AVINFM	.9191	.8448	.0671

Source: author's own calculations, data derived from categories described in Appendix 1.

In the following period, the variables found most significant in the explanation of migration levels altered somewhat and, if anything, were more concentrated. The six most powerful variables accounted for 86.6% of the variation, though, as Table 4.6 demonstrates, the sixth variable added only a little to the total.

TABLE 4.6: NET MIGRATION 1945-51: EXPLANATORY VARIABLES IN BASIC MODEL

Step Number	Variable	R	R^2	Increase in R^2
1	GP2534	.6436	.4142	.4142
2	MLFFIS	.7403	.5480	.1338
3	POVERT	.7982	.6371	.0891
4	LAFOFM	.8691	.7553	.1182
5	GP1524	.9178	.8423	.0870
6	MCBR	.9308	.8663	.0240

Source: author's own calculations, data derived from categories described in Appendix 1.

The significant variables listed above may be grouped into two major categories -- age group and labour force characteristics, with nearly half the total variation being explained by age group variations. The high level of explanatory power previously found in LAFOFM was reduced, though it was still significant, and the role previously played by LAFOMA was replaced by the more specific MLFFIS. POVERT too entered the multiple regression for the first time at a significant level.

The last of the three periods analysed, 1961-66, showed very different levels of explanation. The six most significant variables entered for this period explained 53.5% of the variation in migration, the most powerful of these variations accounting for only 18.3%. However, in general, the variables found to be most significant were not greatly dissimilar from those previously noted, only SIMARA entering into a basic model for the first time. The detailed listing is recorded in Table 4.7.

TABLE 4.7: NET MIGRATION [illegible]1-66: EXPLANATORY VARIABLES IN BASIC MODEL

Step Number	Variable	R	R^2	Increase in R^2
1	GP2534	.4278	.1830	.1830
2	LAFOMA	.5574	.3107	.1277
3	SIMARA	.6572	.4320	.1212
4	GP1524	.6859	.4705	.0385
5	SIN15+	.7051	.4971	.0266
6	POVERT	.7315	.5352	.0380

Source: author's own calculations, data derived from categories described in Appendix 1.

The degree to which the various basic models failed to account for the actual levels of migration is shown by the standardised residuals from regression portrayed in Figure 4.10. Throughout the whole period 1935-66, the basic models tended to underpredict out-migration on the north and east coasts. This was true most consistently of the Trinity and Carbonear-Bay de Verde Districts. The degree to which migration was underpredicted tended to decrease from 1935-45 to 1945-51 but it increased sharply in 1961-66: this of course may be seen as merely another function of the relatively low explanatory power of the 1961 model. Underprediction however was seldom universally concentrated and, during most periods, underpredicted districts were readily interspersed with those overpredicted. To the extent that overprediction was at all concentrated, grouping occurred on the Avalon Peninsula close to or contiguous with St. John's (Ferryland, Port de Grave, Placentia and St. Mary's), or on the most isolated sections of the south and north coasts (White Bay, Green Bay, Fortune Bay-Hermitage and Burgeo-La Poile).

A tentative explanation of these exceptions might be that the Avalon districts were able to relieve to some extent the worst pressures of population by daily or short-term commuting to job opportunities available in St. John's: this would have had the effect of reducing the permanent outflow. The overprediction for the northern districts (White Bay, Green Bay) is almost certainly a function of

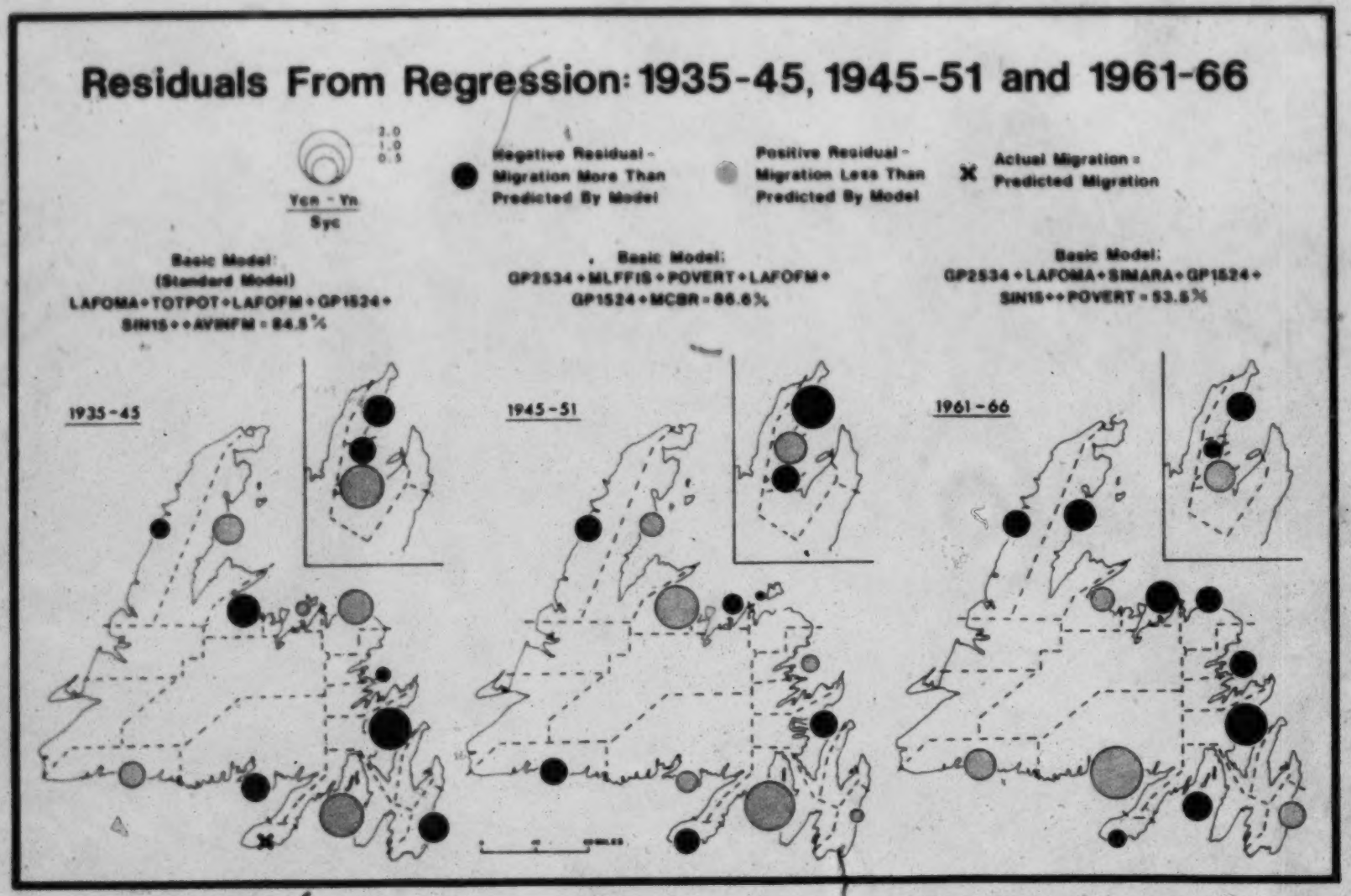
Residuals From Regression: 1935-45, 1945-51 and 1961-66
3.0
1.0
0.5
Ycn - Yn
Syc
Negative Residual - Migration More Than Predicted By Model
Positive Residual - Migration Less Than Predicted By Model
Actual Migration = Predicted Migration
Basic Model: (Standard Model) LAFOMA + TOTPOT + LAFOFM + GP1524 + SIN1S + + AVMFM = 84.5%
Basic Model: GP2534 + MLFFIS + POVERT + LAFOFM + GP1524 + MCBR = 86.6%
Basic Model: GP2534 + LAFOMA + SIMARA + GP1524 + SIN1S + + POVERT = 53.5%
1935-45
1945-51
1961-66

Figure 4.10: Standardised Residuals from Regression, Newfoundland 1935-45 1945-51 and 1961-66

the small but, on the provincial scale, important resource development in those districts. The tendency to overprediction on the south coast may perhaps be seen as a function of isolation. In many ways this area was and is the most remote area of the province, cut off from all normal modes of land transportation: this isolation probably inhibited out-migration to a degree, though it may have had the reciprocal effect of promoting a strong internal interaction, a high level of which was noted in the analysis of Chapter III. Neither is this interpretation at variance with the high actual rates of out-movement shown for the south coast, for the instances of overprediction in the various models merely imply that, given the levels of the independent variables attained in particular districts, migration was relatively low.

The converse of this suggested explanation for the overpredicted districts may provide a rationale for the grouping of the underpredicted areas. It has been noted that the latter districts are grouped, if at times sporadically, mainly on the north-east coast between Conception Bay and Twillingate. These districts may be classed, from a spatial and interactional point of view, as midway between the most isolated districts of the south coast on the one hand and the Avalon districts within the short-term commuting region of St. John's on the other. In short, though these underpredicted districts were relatively isolated, and beyond easy commuting range of the main urban

employment centre, they were more closely tied in to the available transportation systems (particularly the sparse rail network) and their out-movement was consequently less inhibited. In fact, it was greater than the basic variables would suggest.

These suggestions must be tentative because of the paucity of the cases and the not infrequent exceptions to the trend, but they do have the merit of seeking and propounding a degree of spatial or locational order in our understanding of regional variations in migration levels.

The temporal changes in the variables associated with out-migration are somewhat simpler to designate as is made clear by an examination of Figure 4.11. Although there were shifts both in the actual variables incorporated from period to period, and the order in which they were entered, the prevailing impression from the figure is one of continuity. In the diagram the boxed variables are those which are common from period to period and the junction lines emphasise continuity between periods. Dashed lines represent continuities between variables which were seen to be functionally (though not necessarily statistically) related. For example LAFOMA is consistently a high ranking explanatory variable if MLFFIS can be taken during 1945-51 as a more specific case of LAFOMA. Similarly the category GP1524 for 1935-45 is in part a parallel measure to GP2534 of the succeeding periods, in that the cohort 15-24 of 1935 was exposed to the risks of migration over a

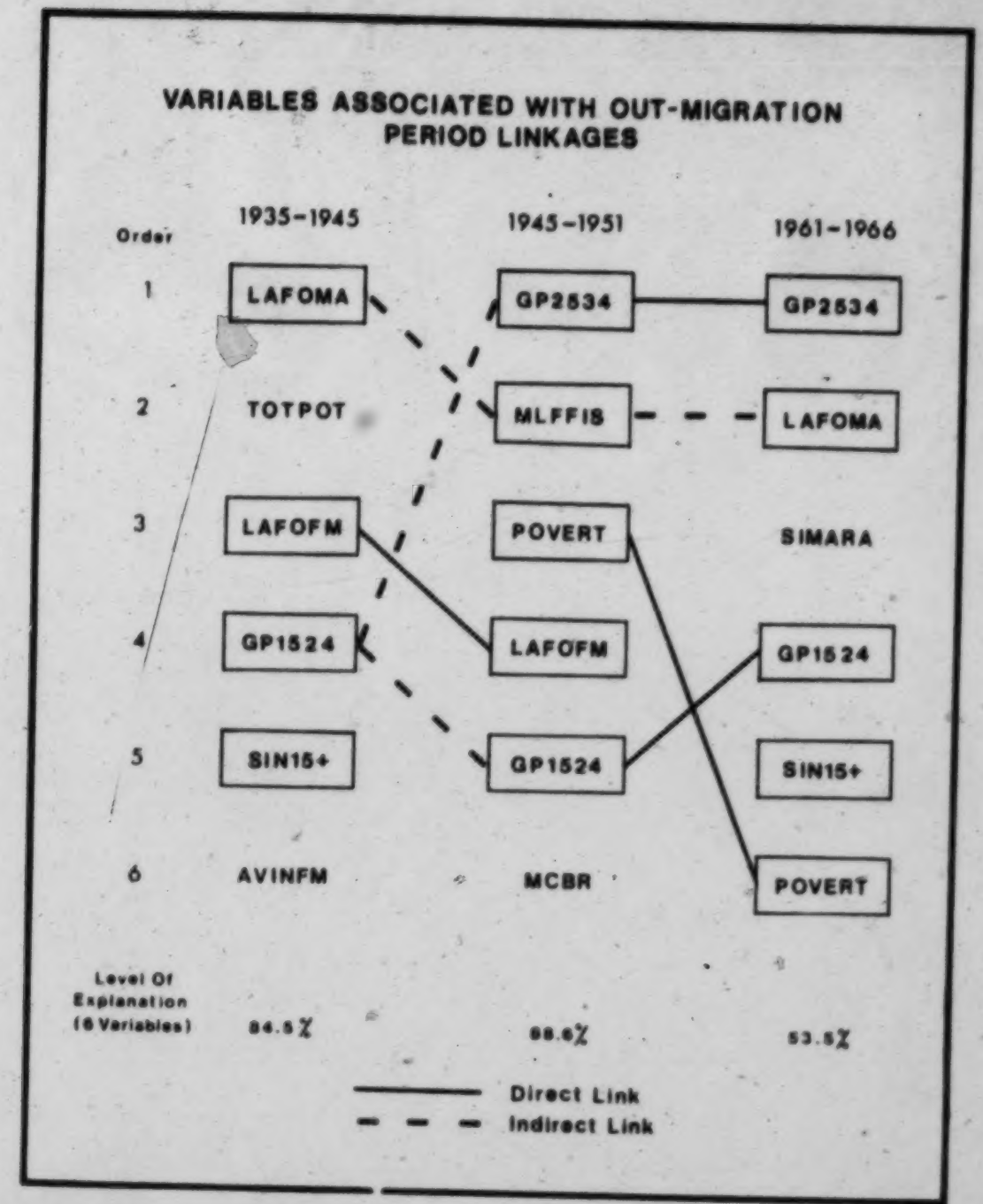

Figure 4.11: Variables associated with out-migration - period linkages

ten year period of analysis: it would have become a 25-34 cohort at the end of its period thus overlapping the 30-39 cohort at the end of the succeeding periods. If these parallels are accepted as having some validity, it will be seen that the dominant explanation of variations in the scale of out-migration lay fairly consistently in the levels attained by participation in the male labour force, and the size of the age group 25-34. Underpinning this conclusion is the persistence at a slightly lower level amongst the explanatory variables of the parallel variables LAFOFM and GP1524. And at yet a lower level of explanation, single status and poverty seem to have been significant elements over the long period.

Despite this fair degree of consistency in the order of the explanatory variables, the level of explanation fell off sharply between the periods 1945-51 and 1961-66. As the foregoing analysis points out, the six most powerful variables explained well over 80% of the variation in the first two periods, but only 53.5% for the last period. Similarly, when all thirteen variables were incorporated into the regression equation, the level of explanation rose from 90.4% to 99.9% then fell to 79.9% over the three periods. Obviously the more the variables counted, the greater the chance of mutual interdependence and mu'ticollinear distortions: but it is interesting to note nevertheless the same trends as were encountered in the more parsimonious regression. To further test this theme of temporal decline in

explanatory power, the regression was run a second time. On this occasion, the six variables of the basic model for 1935-45 were forced through the regression for the two succeeding periods. The aim was to assess the quantitative decline in explanatory power of what was now called a 'standard' model and to see whether the decline was constant or whether it reversed itself. The analysis recorded that the basic/standard model for 1935-45, which accounted for 84.5% of the variation for that period, explained only 57.4% of the variation in 1945-51 and little more than 40% in 1961-66. There was therefore a continued falling off in the significance of the standard model, this confirming the impression of a steady weakening in the explanatory power of the independent variables derived from the free analysis.

The residuals from regression for the standard models (Figure 4.12) however, replicate in large measure the distribution of unexplained variation derived from the basic models: even at these relatively low levels of explanation, the north-east coast is habitually underpredicted by contrast with the overpredictions of the districts contiguous with St. John's, the isolated south coast districts and the developing mining areas of White Bay and Green Bay.

Summary and Conclusions

Despite variations in the level of migration from period to period, the spatial patterns of migration remained fairly consistent with the rural districts showing persistent

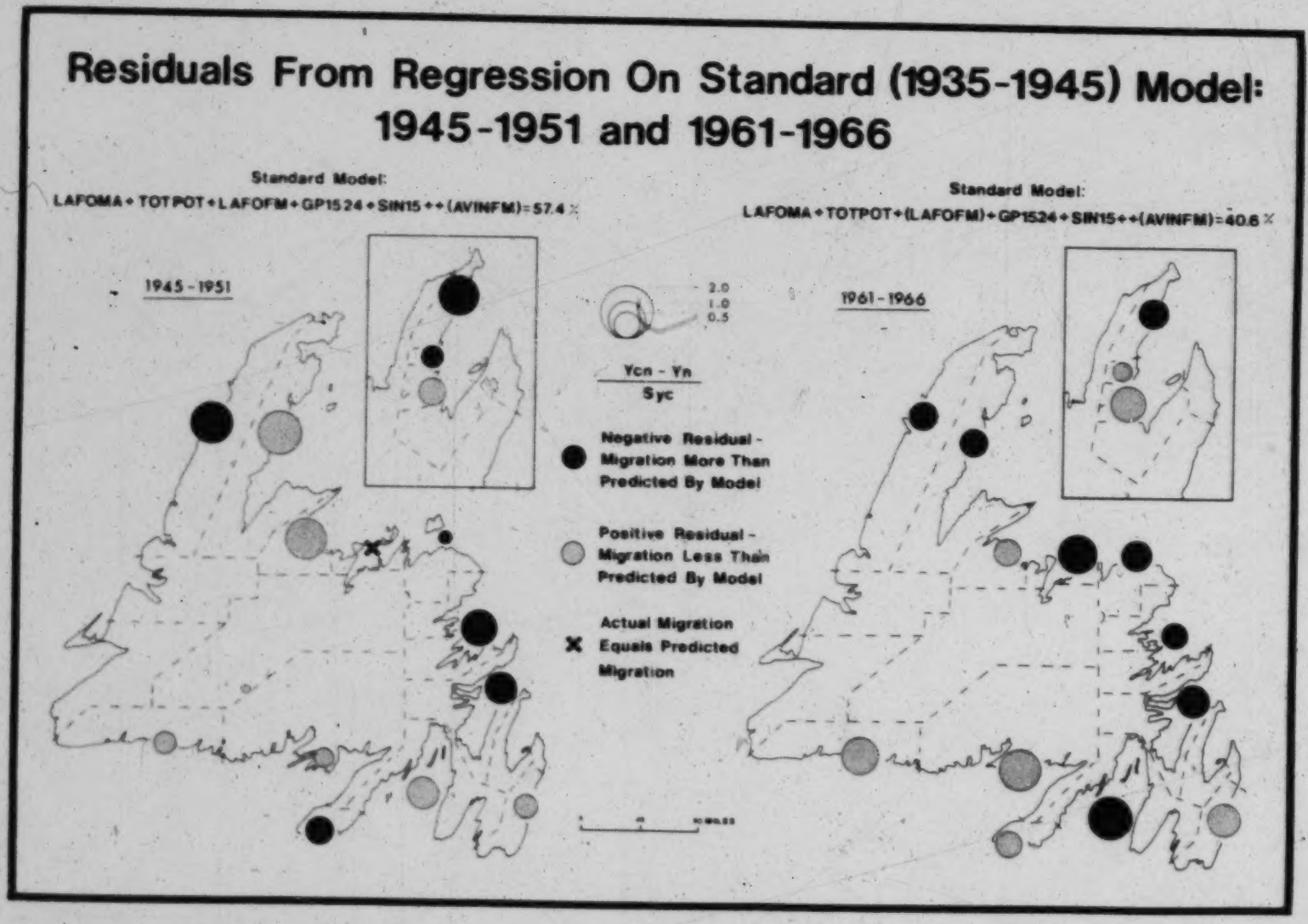
Residuals From Regression On Standard (1935-1945) Model:
1945-1951 and 1961-1966
Standard Model:
LAFOMA + TOTPOT + LAFOFM + GP1524 + SIN15 + + (AVINFM) = 57.4 X
1945 - 1951
Standard Model:
LAFOMA + TOTPOT + (LAFOFM) + GP1524 + SIN15 + + (AVINFM) = 40.6 X
1961 - 1966
2.0
1.0
0.5
Ycn - Yn
Syc
Negative Residual - Migration More Than Predicted By Model
Positive Residual - Migration Less Than Predicted By Model
Actual Migration Equals Predicted Migration

Figure 4.12: Residuals from Regression on Standard (1935-45) Model: 1945-51 and 1961-66

out-movement. This out-movement however was balanced by high levels of natural increase, and population development, at least in rural Newfoundland has tended towards equilibrium and balance rather than absolute loss. This is not to say however that there is an easy and positive relationship between high levels of out-movement and high natural increase: it is economic rather than purely demographic indicators which furnish the most satisfactory explanation of variations in migration.

Perhaps the most striking phenomenon uncovered, but as yet unexplained, by this analysis is the sharp discontinuity in the power of the explanatory variables. Does this clearly marked break indicate a deficiency in the analysis or does it imply a new set of factors operating on the migration process? It is probable that both these suggestions contain elements of the truth. To be more specific, the limitations of the analysis lie not so much in the methodology as in the type of data put into the models: it may be noticed for example that nearly all the independent variables found to be successful in explaining the variations in migration for the earlier periods are descriptive of conditions in the source areas. The high incidence of poverty and deprivation, the low degree of participation in the labour force, and the large proportions of the population in traditionally mobile age-groups, may be classed as push factors. No comparable analysis was made of pull factors in areas to which migrants might have been directed: the single

independent variable which might be thought to have measured the attractive power of such districts was TOTPOT which was not found to be highly significant after the first period analysed.

Two interpretations arise from this immediate analysis: firstly, given that the independent variables, the push factors, decline in predictive power towards the end of the whole period studied, it may be postulated that it was other factors, pull factors, which account for the large unexplained variation in the out-migration for 1961-66. A good case may be made to demonstrate that roughly around the beginning of this latter period, a turning point occurred in the pattern of Newfoundland's post-Confederation development. In the first decade of Confederation, Newfoundland had seen few fundamental economic advances: perhaps the most significant gain was the access to high universal social security payments noted at the beginning of this chapter. This benefit apart, Newfoundland in many ways slipped backwards, at least relative to the rest of Canada: "between 1949 and 1959, the gap in average per capita incomes between island and mainland widened, from $460 to $680"[19], and in 1959 unemployment reached 19.2% of the labour force. But in a burst of constructive economic development in the early 1960's "Newfoundland. .turned the corner (and) acquired at least the basis for a modern industrial

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[19] Gwyn, R., op. cit., pp. 182-183.

state".[20] It was this new economic growth, largely oriented towards the urban and transportation sectors, which strengthened the pull factors, both in the urban growth centres of the province and in the more readily accessible opportunities of the mainland. By way of contrast, the severity of the push from the rural districts was diminished by such factors as universal social security payments, rural electrification and road systems. It is this changing balance of forces that is reflected in the results of the regression analysis.

Secondly, if the pull factors are not analysed, or at least not well expressed in the single variable TOTPOT, it remains true that distance, or more accurately location, was a not insignificant element in the variation in migration. The residuals from regression have shown with fair consistency that overprediction of migration was largely concentrated in either remote districts or in districts close to the main provincial centre of job opportunity. Thus, other things being equal, migration may be seen to be dependent on the degree of accessibility to opportunities, but in the perhaps unusual form that the most accessible and least accessible areas have reduced migrational levels. The areas of intermediate accessibility, on the other hand, are more vulnerable to high and sustained levels of population loss.

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[20] Ibid., p. 198.

CHAPTER V

THE LABRADOR MIGRATIONS

Throughout the period 1935-66, all the districts of island-Newfoundland experienced phases of population loss through net out-migration: in most districts this process was unrelieved by any substantial inflow. In only one district of the province, Labrador, was this phenomenon not typical. In fact, in every inter-censal period, Labrador recorded net in-migration and marked population growth. The population of 4,716 in 1935 had grown to 21,157 by 1966 to give a very rough growth rate (uncompounded) of more than 10% per annum. This growth was more or less evenly divided between natural increase and migrational gains as the detailed statistics of Table 5.1 demonstrate.

The rate of growth was not even throughout the period, and the relatively low growth points (1935-45 and 1956-61) coincided with slackened in-migration. Moreover as much of the natural increase must have resulted directly from the in-migrant groups, in-migration may be looked on as the major population dynamic in Labrador.

This period of marked population growth was a reflection of an expansion in the economic development of Labrador particularly through and following the Second World War.

TABLE 5.1: LABRADOR: POPULATION, NATURAL INCREASE AND NET MIGRATION 1935-66

	Population at Beginning	Population at end	Population Change	Average Ann. Increase (%) [x]	Total Natural Increase	Total Net Migration	Rate % [xx] Natural Increase	Rate % [xx] Net Migration
1935-45*	4,716	5,525	+ 809	1.7	599	+ 210	11.5	+ 4.0
1945-51**	5,525	7,890	+2,365	7.6	874	+1,491	23.0	+39.3
1951-56	7,890	10,814	+2,924	7.4	1,209	+1,715	25.9	+36.6
1956-61	10,814	13,534	+2,720	5.0	2,113	+ 607	34.7	+10.0
1961-66	13,534	21,157	+7,624	11.3	3,634	+3,989	41.9	+46.6
1935-66	4,716	21,157	+16,441		8,429	+8,012		

* 10.17 years.
** 5.66 years.
x simple increase based on population at beginning of period.,
xx rate based on mean population for period.

Source: Censuses of Newfoundland 1935 and 1945; Censuses of Canada 1951, 1956, 1961 and 1966; Vital Statistics, Department of Health, Province of Newfoundland 1935-66; author's own calculations.

Until 1935, the population of Labrador was concentrated almost entirely on the coast and had fluctuated around the 4-5,000 level since the 1880's: the interior of the country was virtually uninhabited and was in fact only confirmed to Newfoundland by the ruling of the Judicial Committee of the Privy Council in 1927, a ruling ratified by Canada in the 1948 Terms of Union.[1] But the strategic exigencies of the war and American postwar demands for new raw material supplies in politically stable areas promoted the development of the interior. As a result of this expansion the Labrador can be sub-divided into three human-economic zones which may conveniently be dubbed Coastal, Central and Western Labrador, a sequence which echoes the order of their human occupance (Figure 5.1).

The Labrador Coast

The complex coastline of the Labrador[2] is the home of several population groups. The native peoples, both Indian and Eskimo, are concentrated at a limited number of points mainly on the Northern Labrador, north of Cape Harrison. The more numerous permanent white settlers are scattered along the whole length of the coast, but are concentrated

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[1] Memorandum of Agreement entered into on the Eleventh Day of December, 1948, between Canada and Newfoundland. Terms of Union, paragraph 2.

[2] Labrador is frequently referred to in everyday speech as "the Labrador". Originally, this was a vernacular abbreviation of "the Labrador Coast", but it has passed into popular usage as a name to describe any part of Labrador.

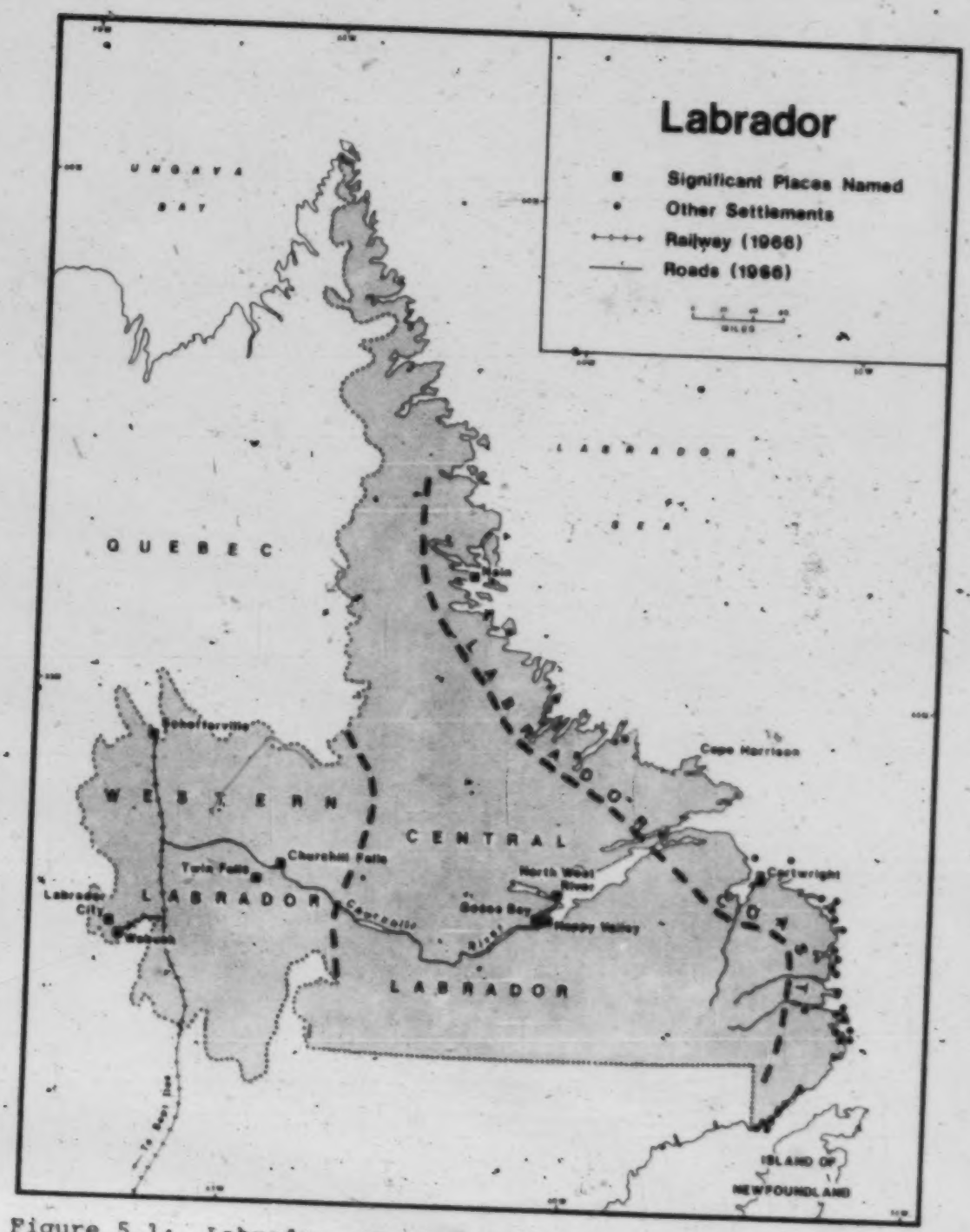

Figure 5.1: Labrador - Regions and Place Names

on the Southern Labrador: they are frequently referred to as "liveyers" and are so named, it is said, as a corruption of the rendering "those who live here". Many of the liveyers derive from Newfoundland, though a significant number settled on the Labrador directly from England or Scotland.

The original settlement pattern in this zone was based on summer fishing stations situated on the outer coast, close to the points where cod struck into the shore: the "tickle"[3] became of particular significance in this regard as a focus for settlement, and the importance of the tickle to fishing settlement establishment is still basic to the present settlement ecology. The development of year-round settlement however posed greater problems: the permanent settlers required shelter from, yet easy access to, the sea for the prosecution of the cod-fishery. Availability of wood for boat and house construction became a further prerequisite for permanent settlement. These two basic requirements however were seldom found in association with one another. Thus, physical and biological limitations fostered the development of a dual settlement pattern with winter settlements located on the inner coast near a supply of timber, game and fur, and a summer place at the 'landwash'. A regular seasonal pattern of migration developed, and persists, between winter and summer homes which may be up to 50 miles apart.

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[3] A 'tickle' is a narrow run between islands, or between a headland and an island. The 'landwash' is the zone of contact between land and sea.

The dates of migration of residence and population are determined by a number of variables, with climatic conditions, especially ice conditions, being very significant. But in general, and particularly on the Southern Labrador coast, the liveyer population begins to move out to the summer fishing stations around the end of May, the men having previously made the trip out to transport the summer's supply of wood and mend the nets at any time between February and the end of April.

A short time after the liveyers have established themselves at the summer fishery, two other groups of fishermen appear. The "stationers" come "down" from Newfoundland by the Canadian National Railways coastal steamer[4] to occupy summer "stations" on the coast. A second group, the "floaters" go north from island-Newfoundland traditionally in Labrador schooners, though at the present time travelling by modern longliner.[5] Both of these groups have declined in importance, particularly since the Second World War, but the more capital-intensive floaters have been especially sensitive to poor market prices for

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[4] During the 1960's a stationer could transport himself and his family from St. John's to the Labrador for the nominal fee of $6 a head; his boat was carried for an additional, though still nominal, fee. This facility was, and still is, provided by C.N. in recognition of the fact that the 'stationer' fishery is an integral part of the economic adaptation of many rural Newfoundlanders.

[5] Black, W.A., "The Labrador Floater Codfishery", Annals of the Association of American Geographers, Vol. 50, 1960, pp. 267-293. A schooner was a two or three masted sailing vessel of (usually) up to 100 tons burden and a crew of perhaps 8-10 men. A longliner is a smaller vessel of 50-65 feet in length with a crew of 4-5 men; longliners were developed in the 1950's as multipurpose fishing vessels.

fish.[6] The stationers dwindle in number, but more slowly. At the height of the development of the stationer and floater fisheries, around the beginning of this century, the number of seasonal visitors was far in excess of the liveyer population. It is doubtful whether this is the case today, but nevertheless, the seasonal migration from island-Newfoundland to the Labrador Coast may be seen as a fundamental and persistent axis of interaction between the island and mainland portion of the province. The relative strength of this axis may be gauged to some extent by its prominence during the analysis of Chapters II and III (see Table 2.6 and Figures 2.7 and 3.6).

Central Labrador

The Labrador Coast is roughly divided by the long sheltered inlet of Lake Melville which strikes over 100 miles westward from the Atlantic into the interior. At the head of the lake, around Goose Bay, is the complex of settlement and economic activity most conveniently designated Central Labrador.

Settlement in the Goose Bay area is of long standing, the original centre being at North West River where the Hudson's Bay Company opened a trading post in 1836. The post was intended to capitalise on the rich resources of fur available in the hinterland and, gradually, there grew up a

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[6] Black, W.A., "Economic and Marketing Aspects of the Labrador Floater Codfishery", Geographical Bulletin, Vol. 17, 1962, pp. 78-84.

settled community largely composed of trappers who harvested fur from a wide area, some trappers travelling annually to their grounds as far west as the height of land. The addition of a Grenfell Mission Station, with hospital and school, and later an Oblate Mission (to administer to the needs of the Nascaupi Indians) established North West River as an administration centre of some importance, but until the 1940's the indigenous economy was based squarely on the hard but financially rewarding occupation of trapping. The only other attempts to diversify the local economy, lumbering and fishing, were sporadic and relatively small scale.

A development providing a viable alternative to the traditional ways of life of both coast and interior occurred during the Second World War when a large military base was built at the head of Lake Melville. The area in which the base was built possessed several geographic features unusual in Labrador, the most important being those of climate and physiography. Climatically, the Goose Bay area enjoys a settled, if extreme continental climate free from the wetness, poor visibility and windiness prevalent on the coast. Physiographically, the area is founded on an extensive series of sand plains, the delta and terrace remnants of a post glacial sea much higher than present sea level. Thus, climate and physiography were instrumental in the choice of this area for the site of a large military airport -- the good flying conditions were complemented by the presence of extensive tracts of easily cleared level land which was both

well-drained and had no hint of permafrost.

The main reason for the development of the base in the general area of Labrador however was strategic, and embodied considerations of situation rather than site: Goose Bay lay on the short Atlantic air ferry route between Canada and Britain, and was an essential staging post in the shuttling of men and materials to the European theatre of war. Such was the haste to develop the military base that the first aerial surveys were conducted in the late summer of 1941 and construction began before the end of the year. The base in its original form was quickly completed though a formal agreement leasing the land to Canada was not signed until 1944.[7] Over time, a part of the base was leased to the American Forces, and the base itself was substantially enlarged.

The construction and maintenance of the military site 25 miles south-west of North West River disrupted somewhat the originally tightly knit community, and trapping declined as wage employment became more regular. But more important from the point of view of population distribution and community function, North West River was replaced as the main centre by a new and rapidly expanding centre, Hamilton River.

The building of the military base called for substantial amounts of civilian labour which was not available in

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[7] Chadwick, St. J., Newfoundland: Island into Province, Cambridge, 1967, p. 180. At the time, of course, Canada was a separate political entity.

the immediate neighbourhood. Therefore, from 1942 onwards there was a considerable influx of people to the Goose Bay area, particularly from the coastal regions of Labrador. The original settlers squatted in small family groups at a number of locations, their principal aim being to be close to their new jobs. However, after a short time, for reasons of both convenience and security, the military authorities forbade civilian settlement within a five mile radius of the air base. The settlers therefore chose the most advantageous spot on the periphery of the restricted zone, a series of sandy terraces overlooking the Hamilton River. Here, the dense black spruce and alder was cleared and cabins erected, fronting at first on the river which was the most convenient transportation route, and later following the line of the trail which developed back from and parallel to the river. This original nucleus is still a distinct zone in the present town, comprising large irregular lots and many trees. The newer areas, developed increasingly in the 1960's, are more regularly laid out on surveyed and serviced lots, the land having been cleared in toto by heavy equipment.

Almost the whole settlement of Happy Valley, as it came to be called, depended ultimately down through the 1960's on the air base. The Cold War of the 1950's manifested itself in heightened military preparedness and investment which filtered down quite strongly to the people of Happy Valley. As a corollary of this development, major activity

shifted to the American side of the base where the civilian labour force through the 1950's and 1960's tended to be roughly 1000 workers or two to three times the size of the Canadian workforce. In 1967 the Canadian Forces withdrew from the base. Although the U.S.A.F. still maintained a considerable establishment, and the Canadian Department of Transport took up much of the slack left by the withdrawal of the Canadian Forces, there were many doubts in the minds of the local inhabitants as to the future economic viability of the Goose Bay area, and this was reflected in a certain unwillingness to invest and develop on more than a short-term and domestic level.

Some relief from the spectre of base closure has been found in the beginnings of local resource development. In 1967 it was announced that a beginning would be made on the harvesting of the rich stands of black spruce for which Happy Valley and Goose Bay are natural centres. The cutting, begun in a small way in 1969, was to feed a projected Kraft-linerboard mill to be built at Stephenville in Western island-Newfoundland: the mill ultimately commenced production late in 1972, pulpwood being taken by sea from Goose Bay to Stephenville. In addition power and mineral resources close to the area have a considerable potential: a hydro-electric power source of the order of three million horsepower lies undeveloped at Muskrat Falls only thirty miles from Goose Bay, and there are important metalliferous deposits, including uranium, less than one hundred miles to the north. In the late 1960's however, developments based on these resources were still the object of speculation, and no firm projects were actively contemplated.

The Goose Bay area exists then as a kind of median representative of the human and economic geography of Labrador. A polyglot immigrant population, comprising settlers from the Labrador coast, Newfoundlanders, Indians, Eskimos, and some mainland Canadians, stands poised between the traditional ecological adaptations of coastal Labrador to the east, and the technological adaptations of newer communities to the west. The economic potential of the area is based on renewable resources of cheap power and timber, with the added possibility that it may function as a service centre for developing mining centres to the north. It is probable that these economic bases will provide an assured future at an increased level of prosperity for the settlements of the Goose, and that the area will increasingly find more in common with its neighbours to the west.

Western Labrador

The boundary between central and western Labrador may be conveniently if arbitrarily drawn at the edge of the Labrador Plateau which is here a prominent feature of the glacially moulded Laurentian Shield. This lake strewn plateau, from which the ice retreated approximately 7,000 years ago, contains two considerable and partially developed resources, iron-ore and water-power.

Until the late 1940's, this interior plateau was almost totally unpeopled: its only inhabitants were transient Indian bands, the few winter trappers from North West River,

and the occupants of sporadic fur trading posts. It had however long been recognised that vast deposits of rather low grade iron-ores lay in the synclinal structures in the west of the plateau that had come to be known as the Labrador Trough.[8] During the 1930's initial exploration of this resource delineated an area in the north of the Trough where, in 1950, astride the border between Newfoundland and Quebec, development began on a deposit proved at 400 million tons of 54-55% iron-ore. A railway (The Quebec North Shore and Labrador Railway) was built from Sept-Iles on the North Shore of the Gulf of St. Lawrence to Burnt Creek, 356 miles to the north, and mining began in 1954. A new town, Schefferville, was built close to the mining area.

Although this development was crucial as a base on which later mining and power projects of the Labrador interior were dependent, it had only a modest impact on Newfoundland. Most of the ore bodies were in Quebec, as was the townsite, and administration of the complex which belonged to the Iron Ore Company of Canada, was through Montreal and Quebec City. A minority of the labour force was from Newfoundland.

In the south of the Labrador Trough however, and wholly within the province of Newfoundland, lay a much greater area of low grade iron-ores. By the time that

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[8] Howse, C.K., "I Witnessed the Labrador Revolution", in Smallwood, J.R. (ed.), The Book of Newfoundland, St. John's, 1967, Vol. 4, pp. 28-42.

production of the direct-shipping ore from Schefferville had commenced, the Iron Ore Company of Canada had proved more than 2 billion tons of ore with at least 35% iron content. At the same time, laboratory research was attempting to develop methods of concentrating this low grade ore from 35% iron to 65% iron. This was successfully done, and in 1958 the Iron Ore Company decided to commence mining and mill development. A four year period of construction ensued before the official opening of the complex in 1962.

The technological development of concentration which had made possible the exploitation of the low grade ores was compounded during the construction phase of the I.O.C.C. plant by a new demand for an even more refined product. Changes in blast furnace technology made it desirable that the great bulk of the concentrates be turned into pellets. This additional process necessitated the immediate expansion of the new mining complex, and a pelletising plant was added by 1964.

Immediately adjacent to the I.O.C.C. complex, Wabush Mines, a second consortium of United States and European steel makers, sponsored a parallel development. The Wabush mine and concentrator began production in 1964, though the additional pelletising plant was built for economic reasons outside Newfoundland at Sept-Iles in Quebec. The general effect of this was to ensure that the Wabush operation was smaller than that of the Iron Ore Company, at least in terms of numbers employed within the province.

While both companies co-operated in the building of a 40-mile spur railway from the O.N.S.L.R. to the mining site they were unable to agree on a joint townsite. Consequently there were developed two townsites, Labrador City and Wabush, only five miles apart. This has caused some duplication of services, but in a new and prosperous economic environment, any wastage is not as significant as it might have been in a more marginal situation. Though in origin company towns, both Labrador City and Wabush seem to have benefited tremendously from the experience gained in other single-enterprise communities in the Canadian North. Both towns have been constructed as long-term establishments and enlightened attitudes towards housing, schooling, municipal services and local governments have been adopted by the companies. As a result, both centres go some way toward being model northern towns, and this together with the considerable prosperity and full employment makes them unusual in the Newfoundland context.

A final pole of resource development in Western Labrador lies in the hydro-electric power schemes constructed on the Churchill River. Early in the 1960's a power development of moderate size (250,000 HP.) was constructed at Twin Falls, a little more than 100 miles east of the Labrador City-Wabush mining area. Intended to serve the power needs of the mines and their associated townsites, the Twin Falls development also provided the necessary infrastructure for the later development of the much larger Churchill Falls

(6,000,000 HP.) which was commenced in 1968. When completed in 1974, the Churchill Falls development will support another small company town with a population of around 1000.

Thus over the thirty year period from 1935-66, the economic development of what has been dubbed "the Labrador Frontier"[9] has proceeded rapidly, but particularly so since 1955. By the end of this period, an increasingly integrated network of industrial and transportation facilities had begun effectively to occupy what had previously been an uninhabited wilderness. Obviously this quickening frontier development was bound to find a reaction amongst the overcrowded populations of rural Newfoundland. The particular interest of this present work is to assess the degree to which this increased activity was reflected in the population geography, and particularly the migration patterns, of island-Newfoundland.

The View From Newfoundland

For a variety of reasons, the involvement of Newfoundlanders in the northern development of their province was both diffident and delayed. Opinion in Newfoundland, both of government and public alike, had long been aware of the economic potential of Labrador. This awareness however was manifested mostly as

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[9] Hare, F.K., "The Labrador Frontier", Geographical Review, 42, 1952, pp. 405-424.

a hazy optimism, but was devoid of any sure facts on which to base the optimism. The temper and range of opinion was succinctly expressed by the rather sober Amulree Commission of 1933:

> "Prior to and during the litigation in 1927 in which Newfoundland's sovereignty over Labrador was confirmed, extravagant notions of the potentialities of the territory were current. When the case was won, it was felt that the fortune of the island was made...the estimates given in different quarters at different times of the value of the territory of Labrador...vary from $50,000,000 to $500,000,000".[10]

The first halting essays in Labrador development however gave no cause for such optimism.

The development of the Goose Bay base after 1941 was Labrador's first experience of large scale development. It did not however for several reasons have a heavy impact on island-Newfoundland. In the first place there was no labour surplus in Newfoundland during the war years; secondly, transportation to Labrador was difficult, if not impossible to obtain; and thirdly even after the war there were certain institutional or organisational blockages to the movement of Newfoundlanders to Labrador. These two latter reasons were not altogether dissociated.

Table 5.2 shows the numbers of civilians hired by the R.C.A.F. at Goose Bay by period of hiring and area of origin. Even allowing for the deficiencies in the data for

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[10] Great Britain, Dominions Office, Newfoundland Royal Commission 1933: Report, London, 1933, p. 184.

TABLE 5.2: R.C.A.F. - First Hirings at Goose Bay, 1942-66

	Number								
	Island Newfound-land*	St. John's	Labrador	New Bruns-wick	Nova Scotia	Prince Edward Island	Quebec	Ontario	Western Canada
1942-51**	0	1	3	4	8	0	6	2	1
1952-56	56	4	30	131	34	3	57	17	5
1957-61	183	81	253	202	47	9	24	55	16
1962-66	79	31	217	6	9	3	11	36	19
Total	318	117	503	343	98	15	98	110	41
	Percentage								
1942-51	-	0.1	0.2	0.2	0.5	-	0.4	0.1	0.1
1952-56	3.4	0.2	1.8	8.0	2.1	0.2	3.5	1.0	0.3
1957-61	11.1	4.9	1.5	12.3	2.9	0.6	1.5	3.4	1.0
1962-66	4.8	1.9	13.2	0.4	0.6	0.2	0.7	2.2	1.2
Total	19.3	7.1	30.7	20.9	6.0	1.0	6.1	6.7	2.6

* not including St. John's.
** data deficient.

Source: author's field records.

the earlier period, it is clear that island-Newfoundland contributed only a minority of the labour hired for Labrador. Nearly 45% of the hirings were made outside the province, particularly from New Brunswick, and of those made in Newfoundland the great majority were from Labrador itself.

The explanation for what seems, with hindsight, to be an anomalous situation, is moderately simple and rests on the interconnected themes of institutional structure and transportation systems previously mentioned. The Goose Bay air base was leased essentially to a sovereign, though friendly, power the Government of Canada. The organisational channels of the new lessee ran not through Newfoundland, but directly back to the military bases of Central and Atlantic Canada. The transport systems emerging to serve the new base were shaped to the spatial organisation of the Canadian Armed Forces. This would automatically be the case in respect of the military transportation systems, but it also happened to the civilian traffic routes which developed subsequently. Through the 1940's and 1950's, the main civilian access to Labrador was by the small Maritime Central Airways (M.C.A.) which had its headquarters in Summerside, P.E.I. and its main routes out of Moncton, N.B. This helps to explain the large-scale recruitment of workers from New Brunswick (particularly from Kent and Westmorland counties) and, to a lesser extent, from the Chignecto isthmus of Nova Scotia. In total, R.C.A.F.

recruitment of workers from the Maritimes far exceeded that from island-Newfoundland.

Until late in the 1950's this situation was recognised, but not much remarked. The R.C.A.F. base at Goose Bay continued to operate and recruit as it had in wartime and pre-Confederation times. Even if island-Newfoundlanders had wanted to move to Labrador to seek jobs, transportation and information were difficult to come by. During the period 1951-56, this situation caused little concern, for, as noted previously, island-Newfoundland was experiencing its lowest rates of migration loss this century. But when this situation changed, between 1956-61, political moves were initiated to absorb more island-Newfoundlanders in the Canadian base in Labrador. A directive was given to employ more Newfoundlanders -- recruitment was to be primarily through the National Employment Service (later Canada Manpower) in St. John's. If the vacancies arising could not be filled from St. John's only then could the R.C.A.F. recruiters look to Moncton and Montreal. This sequence of events helps to explain the shift in source areas of migrant workers shown in Table 5.2, for after 1959 few workers came from the Maritime Provinces.

This policy change was consolidated by a re-alignment of the prevailing transport systems. By 1959, the Newfoundland airline Eastern Provincial Airways had strengthened its routes and was flying regularly scheduled flights into Labrador from island-Newfoundland. In 1963, this phase of the

operation was carried to its logical conclusion, and with substantial fiscal underpinning from the Newfoundland government, E.P.A. absorbed M.C.A., and the headquarters of the newly enlarged company were established at Gander.

Paradoxically, the limited impact of the R.C.A.F. base was not echoed in the development of the U.S.A.F. The statistics for first recruitment to the American base, drawn up in a manner similar to those for the Canadian base, are shown in Table 5.3.

Despite the limitations of both sets of statistics, the contrasts are sufficiently sharp to be of significance. Whereas only 57% of the Canadian recruitment had been from Newfoundland (including Labrador), over 80% of the American work force was provincial in origin. More striking, only 26% of the total Canadian recruitment was from island-Newfoundland, as against nearly 64% of the American recruitment. Even after the change in hiring practices of 1959, the American recruitment from inside the province far outweighed the Canadian. And interestingly, the limited American recruitment from the Maritimes rose after 1959 as job opportunities on the Canadian base were restricted for Maritime applicants and given, by preference, to Newfoundland workers.

The reasons for this difference in recruitment patterns are not far to seek. Whereas the Canadian base was operating in the province of Newfoundland in an organisational vacuum, and looked back to its home network for recruitment

TABLE 5.3: U.S.A.F. - First Hirings at Goose Bay, 1942-66

	Number								
	Island Newfound-land*	St. John's	Labrador	New Bruns-wick	Nova Scotia	Prince Edward Island	Quebec	Ontario	Western Canada
1942-51	72	7	49	1	1	0	0	1	1
1951-56	105	12	53	6	6	2	8	5	0
1957-61	281	57	51	18	9	1	34	12	1
1962-66	548	91	162	41	31	3	139	30	8
Total	1,006	167	315	66	47	6	181	48	10
	Percentage								
1942-51	3.9	0.4	2.7	0.1	0.1	-	-	0.1	0.1
1952-56	5.7	0.7	2.9	0.3	0.3	0.1	0.4	0.3	-
1957-61	15.2	3.1	2.8	1.0	0.5	0.1	1.8	0.7	0.1
1962-66	29.7	4.9	8.8	2.2	1.7	0.2	7.5	1.6	0.4
Total	54.5	9.0	17.1	3.6	2.5	0.3	9.8	2.6	0.5

* not including St. John's.

Source: author's field records.

and supply, the American base in Labrador was one of an 'overseas' network.

Three other military bases (Fort Pepperell in St. John's, Harmon Field at Stephenville, and Argentia in Placentia Bay) had been built by the American Forces in island-Newfoundland during the Second World War. The Newfoundland civilian population recruited to these bases worked within an organisational and informational system in which transfers from base to base were not uncommon. Apart from the job security afforded by such a horizontally integrated system, there were additional pressing reasons why workers would try to stay within the organisation, not least the pensions and bonuses accruing to those with long service. Job security, pension rights and the possibility of transfer and promotion within the organisation were sufficiently rare in Newfoundland in the 1940's and 1950's, that positions in the civilian work force of the American bases were eagerly sought. These factors contributed heavily to the flow of Newfoundlanders to Labrador, especially after 1961 when the American base in St. John's closed down, and in 1966 when the Stephenville base closed.

The Movement to Western Labrador

The policy changes described above, whereby labour recruitment practices and travel routes were restructured in 1959, were however not solely or even principally directed at Central Labrador.

By 1959, it was becoming clear that the developments in Western Labrador would require a large labour pool in the early 1960's, and the attention of the provincial government was directed to ensuring that Newfoundland workers were aware of the opportunities. For example, a report on the need for and prospects of the resettlement of outports, submitted to the government in 1960, contained the following recommendations:

> "...4. An effort should instantly be made to ensure that as high a proportion of Newfoundlanders as possible shall be employed in the development of Labrador. Considering the Lake Wabush development, this recommendation envisages more than negotiations with the corporations concerned, it envisages a plan by the Newfoundland Government which will impress upon Newfoundlanders the fact that this development is in Newfoundland, is part of the development of Newfoundland, and that Labrador will be a part of Newfoundland in which to settle permanently.
>
> 5. Efforts ought to be made to establish air service between Newfoundland and the Wabush area of Labrador."[11]

In essence, the population problems of overcrowded rural Newfoundland were to be solved, at least in part, by the new riches of Labrador. The same report emphasised however that "recent experience of resettlement into Labrador is not entirely satisfactory"[12] and noted, perhaps with the example of the R.C.A.F. in mind, that "the avenues of communication to and from the mining developments in Labrador

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[11] Newfoundland, Report on Resettlement in Newfoundland, St. John's, 1960, p. 4.

[12] Ibid., p. 23.

are through Quebec".[13]

Against this background the arrangements made for recruitment to Western Labrador were more elaborate than the contingencies surrounding the movement of labour to Central Labrador.

Recruitment for the Labrador City development of I.O.C.C. was undertaken seriously from 1961. The Wabush Mines campaign for the recruitment of a permanent labour force was prosecuted from 1964. Comparative statistics for recruitment are given in Table 5.4.

TABLE 5.4: RECRUITMENT OF NEWFOUNDLAND LABOUR FOR IRON ORE COMPANY OF CANADA AND WABUSH MINES 1961-66

	I.O.C.C.	Wabush Mines
1961	379	-
1962	800	-
1963	511	-
1964	330	92
1965	449	235
1966	524	181
Total	2,993	508

Source: author's field records.

The disparity in the size of the recruitment between the two operations was largely a function of the more elaborate processing carried out at the I.O.C.C. plant. But in general the Western Labrador scale of operations and

[13] Loc. cit.

recruitment was much larger and more concentrated than that experienced in Central Labrador.

Not all the recruitment for Western Labrador came from Newfoundland: large numbers of workers moved in through the corporate networks of the mining companies eg. in the case of the I.O.C.C. from Schefferville, and in the case of Wabush Mines from Sept-Iles. But the majority of the basic labour force was extensively canvassed in island-Newfoundland by the companies. Personnel offices, and in the case of the I.O.C.C., an administrative headquarters, were set up in St. John's, and the personnel officers undertook periodic recruiting trips to the other main centres of population on the island (Grand Falls and Corner Brook). There was however, no office or agency set up to recruit in Labrador, and interaction between Coastal and Central Labrador, and the developing western interior was negligible at all times.

Newfoundland Source Areas for Labrador Labour Force

Recruitment to the Labrador labour force was not evenly distributed on the island. Of the more than 5,400 trips unambiguously recorded in the data, the district of Burgeo-La Poile contributed only 21; Bonavista North on the other hand, produced 298, and St. John's 1,207. In order to assess more accurately the relative scale of movement to Labrador, the number of trips made from each district was computed against the mean size of the male labour force (males 15-64) in each district. The detailed statistics

are contained in Table 5.5.[14]

When the differently sized labour pools are thus discounted, it is clear that there is a strong tendency for Labrador migration to be concentrated on the Avalon Peninsula and North East Coast. A zone stretching from Bonavista to Placentia East embraces all the highest values: to a degree, rates of movement fall off with distance from St. John's though this is a rule of thumb rather than an absolute pattern.

This zone was therefore selected for more detailed analysis and called the Labrador Migration Field. Within this field, two districts were omitted from the detailed analysis. St. John's, though it had moderate rates of recruitment of Labrador workers, was omitted because it cannot be stated with certainty that all of the so-called St. John's movers were in fact from the city. It is more probable that many of them were transients who gave as their address a St. John's boarding house. Bell Island, on the other hand was omitted because it was felt that the transmission of its migrants to Labrador was so clearly a function of mine closure in the single enterprise community, that it would add little to a general understanding of causes of migration in rural Newfoundland. Indeed, inclusion of these data might obscure more important patterns elsewhere.

Two areas outside the field also had strong relationships with Labrador although this is not immediately apparent from the generalised data of Table 5.5. Stephenville in Port

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[14] A commentary on the Labrador data is contained in Appendix 2.

TABLE 5.5: LABOUR MOVES TO LABRADOR 1942-66
(as % of Mean Male Population 15-64)

	Mean Male 15-64 1945-61	Labour Recruitment	% Rate
White Bay	3,833	138	3.6
Green Bay*	2,992	139	4.6
Grand Falls**	8,037	254	3.2
Twillingate	2,928	59	2.0
Fogo	3,085	79	2.6
Bonavista North	3,998	298	7.4
Bonavista South	3,795	196	5.2
Trinity North	3,953	273	6.9
Trinity South	3,436	216	6.3
Carbonear-Bay de Verde	3,514	267	7.6
Harbour Grace	2,437	161	6.6
Port de Grave	2,579	182	7.1
Harbour Main	3,408	342	10.0
Bell Island	2,742	172	6.3
St. John's+	25,456	1,207	4.7
Ferryland	1,971	225	11.4
St. Mary's	1,259	212	16.8
Placentia East	2,120	161	7.6
Placentia West	2,942	108	3.7
Burin	3,306	72	2.2
Fortune Bay-Hermitage	3,580	56	1.6
Burgeo-LaPoile	3,057	21	0.7
St. George's-Port au Port	4,925	232	4.7
Humber	7,735	307	4.0
St. Barbe	2,505	65	2.6
		5,442	
Labrador	3,251	1,018	31.3
		6,460	

* includes Lewisporte.
** includes Gander.
\+ includes St. John's extern. districts.
Source: author's field records.

au Port district had numerous links because of the presence there of an American military base; White Bay also had strong links because it was the site of a military radar installation that was ancillary to the main network of American bases.

The Labrador Migration Field

The more detailed analysis of source areas for Labrador migration was conducted at the settlement level. All the moves made to Labrador were allocated to the settlement and district of origin. The total number of moves from the zone, 2,533, was then divided into the field population in 1961 (120,016), this giving a ratio of one move to every 47.4 persons.[15] This ratio was then applied to the populations of each of the settlements sending workers to Labrador and an expected number of migrants derived. The expected number was then related to the observed number.

For example, over the period 1942-66, the small settlement of Badger's Quay in Bonavista North sent sixteen migrant workers to the Labrador. The 1961 population of Badger's Quay was 696, and the field ratio of Labrador migrants to population gives an expected movement of 14.7 i.e. if Badger's Quay had transmitted migrants at the same rate as the field as a whole, it would have sent out 14.7 persons. The actual number sent, sixteen, is therefore

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[15] It would have been better to use the male population 15-64 as a base for the ratio, but these data are not universally available at the settlement level for further analysis.

1.09 times the expected. Calculations of this type were made for every settlement in the field sending migrant workers to Labrador.

The results of these calculations are portrayed in Figures 5.2 and 5.3 in which settlements are depicted by population size classes and the degree to which they provided more or less Labrador migrants than expected.

Two generalisations become apparent from the maps: that migrants tend to be concentrated at particular nodes of transmission, and that in general, the settlements contributing most migrants tend to be medium or small in size. The areas of concentration (Figure 5.2) are seen as three nodes in Bonavista North (the Wesleyville area; the Trinity Wareham area; and the Gambo-Dark Cove area). In Bonavista South and Trinity North only the Little Catalina-Catalina area is a heavily concentrated node though many small settlements, particularly on Random Island sent proportionately large numbers to the Labrador.

On the Avalon Peninsula, (Figure 5.3) there were moderate concentrations around Green's Harbour in Trinity South and Fox Harbour in Placentia East. Heavy concentrations were found in Carbonear-Bay de Verde around Victoria; in Port de Grave district around Brigus, North River and Port de Grave settlement; and in Harbour Main district around Conception Harbour and Avondale. Ferryland and St. Mary's districts also exhibited distinct concentrations of considerably greater than average Labrador migration.

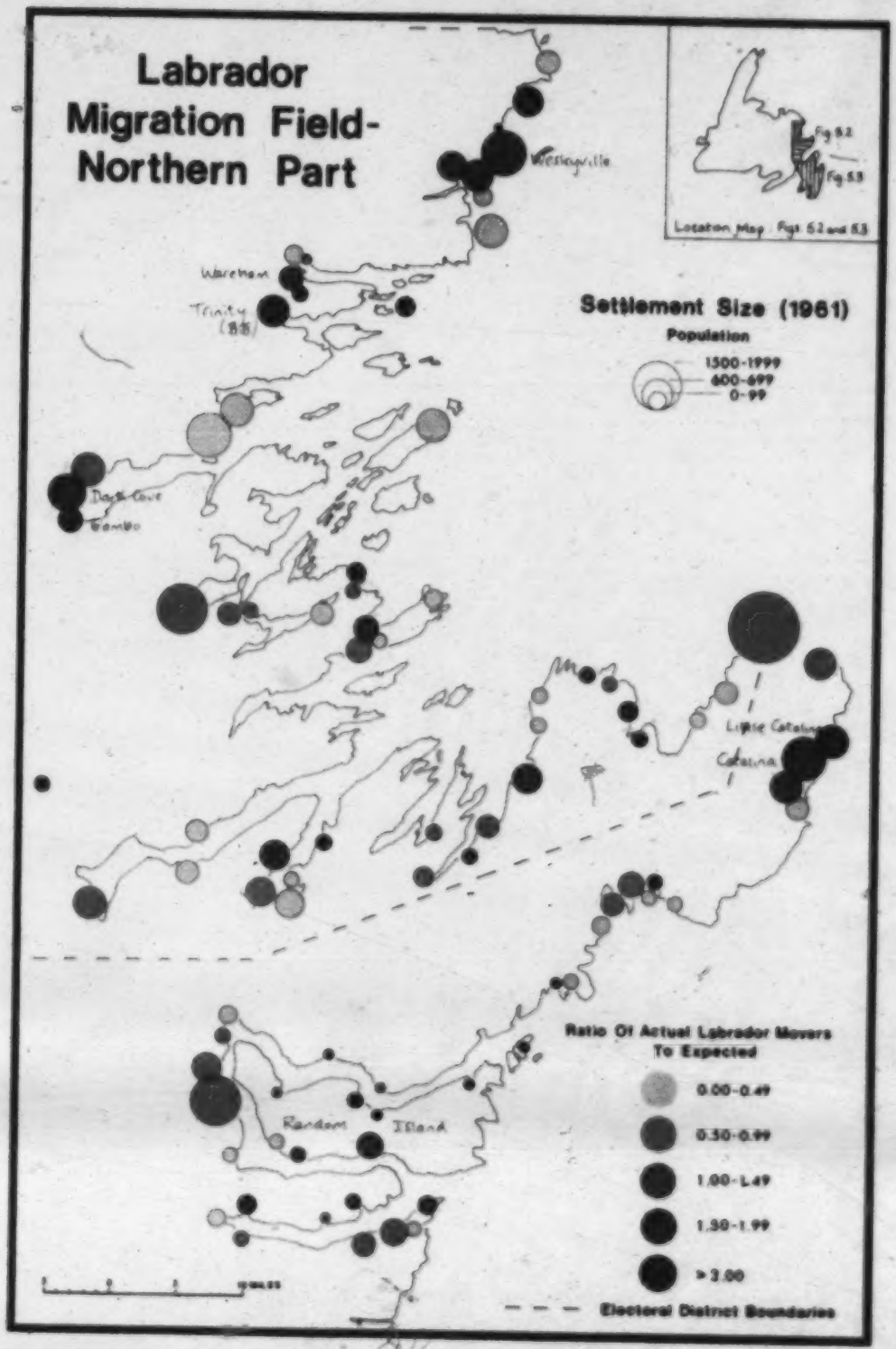

Figure 5.2: The Labrador Migration Field - Northern Part

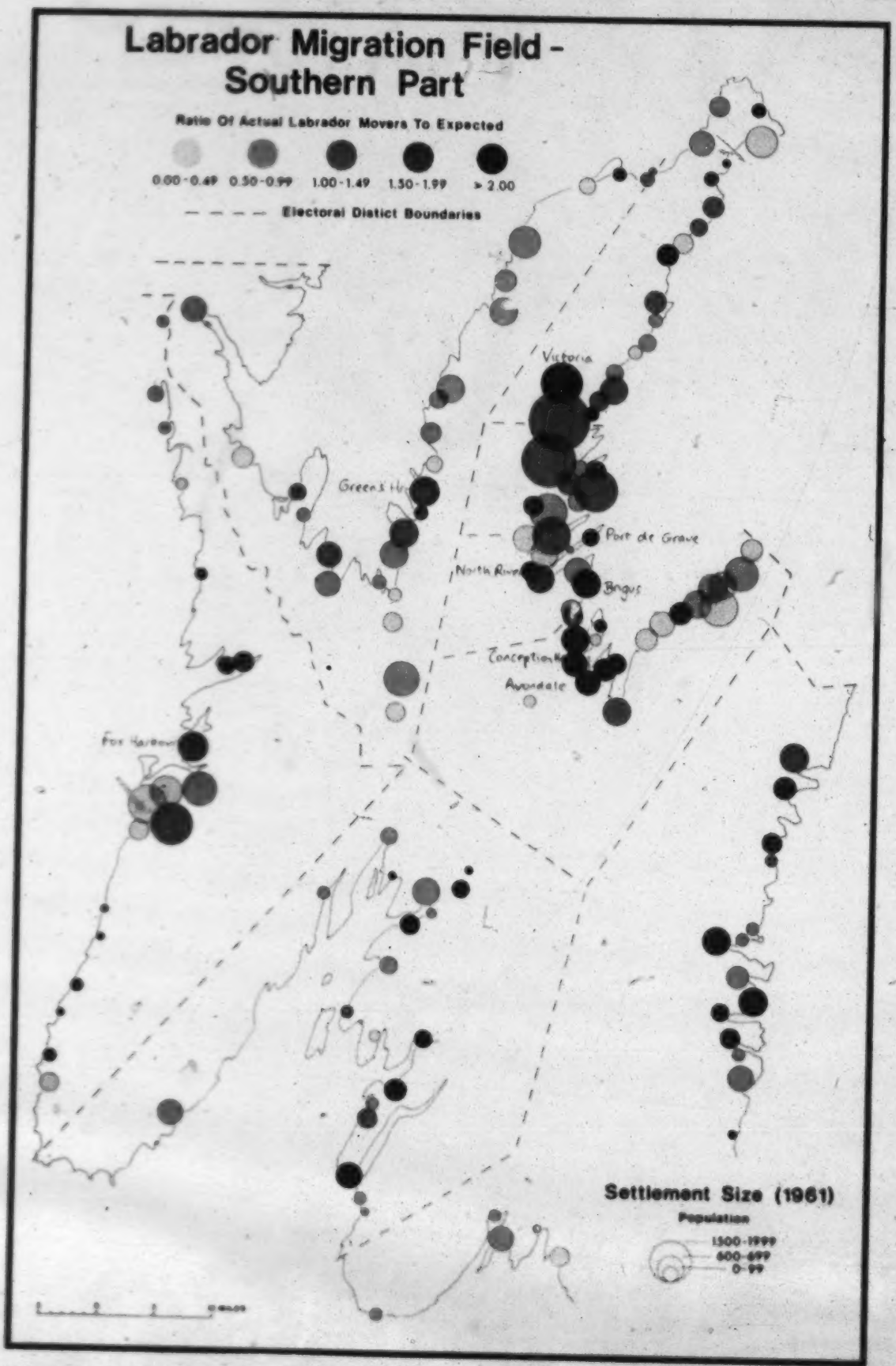

Figure 5.3: The Labrador Migration Field - Southern Part

It is clear from the foregoing analysis that, both at the level of district and settlement, the incidence of migration from particular places is not evenly distributed. Concentrations of migrants are seen to derive from particular points or nodes. Such a pattern is not however unusual and may be broadly attributed to two factors: firstly, it may be a response to widely differing socio-economic and ecologic conditions at the local level; secondly, it may reflect the strength and extent of information fields current in local areas, fields mediated particularly through such factors as networks of kinship and social interaction.[16] Both these themes will be subject to analysis to examine the degree to which they contribute towards the spatial variations in Labrador migration.

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[16] See for example, Morrill, R.L. and Pitts, F.R. "Marriage, Migration and the Mean Information Field: a study in uniqueness and generality", A.A.A.G., 1967, Vol. 57, pp. 401-422.

CHAPTER VI

THE LABRADOR MIGRATION FIELD ANALYSED

The Labrador Migration Field as previously described was made up of a series of discrete points from each of which there emanated movement to the Labrador. Each of the points or settlements from which Labrador migrants came, however, was bound into a system of circulation and information which was both defined by, and in turn helped sustain, the continuing outflow of workers. The strength of this system, or information field as it may be called, is difficult to assess, though it is probably fair to assume that it possessed great local force:

> "Isolation and hardship bred an overpowering sense of place. Newfoundlanders belonged to a series of widening circles; to their family; to their parish; to their faith; to their hamlet, bay and stretch of coastline, and, above all, to their island. 'Who are you one of?' they would ask of one another, and say of the outsider, 'He comes from away'".[1]

In reality, the information field would vary in strength according to a variety of complex socio-economic factors, most of which defy even the roughest of measurements: factors such as kinship, for example are not susceptible to analysis at this scale, and historical associations

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[1] Gwyn, R., Smallwood: the unlikely revolutionary, Toronto, 1968, pp. 62-63.

are hard to calculate. It is feasible however to construct a rough map of a likely Labrador information field utilising the premises of the gravity and potential models as applied to population distribution. The results of this analysis are portrayed in Field 6.1.

The suggested information field was derived by first dividing The Labrador Migration Field into sub-zones which were felt to reflect local circulation patterns. In practice, these sub-zones were based upon the provincial electoral districts with modifications effected where road or other transportation systems clearly distorted otherwise logical patterns of circulation and association. For example, the settlements of Branch and Point Lance, encompassed in the political district of St. Mary's had (and still have) virtually no physical or social association with St. Mary's, but are linked by road to the circulation zone based on Placentia East. In similar vein, Eastport in Bonavista South, is more realistically linked to the circulation sub-zone based on Bonavista South by the road system running through Glovertown. And on a more extensive scale, the northern part of Trinity South District was effectively fed information by the road from Carbonear to Heart's Content and therefore is associated with the Carbonear-Bay de Verde sub-zone. Other, similar peripheral modifications to the electoral district boundaries make possible the delineation of a system of fairly realistic sub-zones in which local

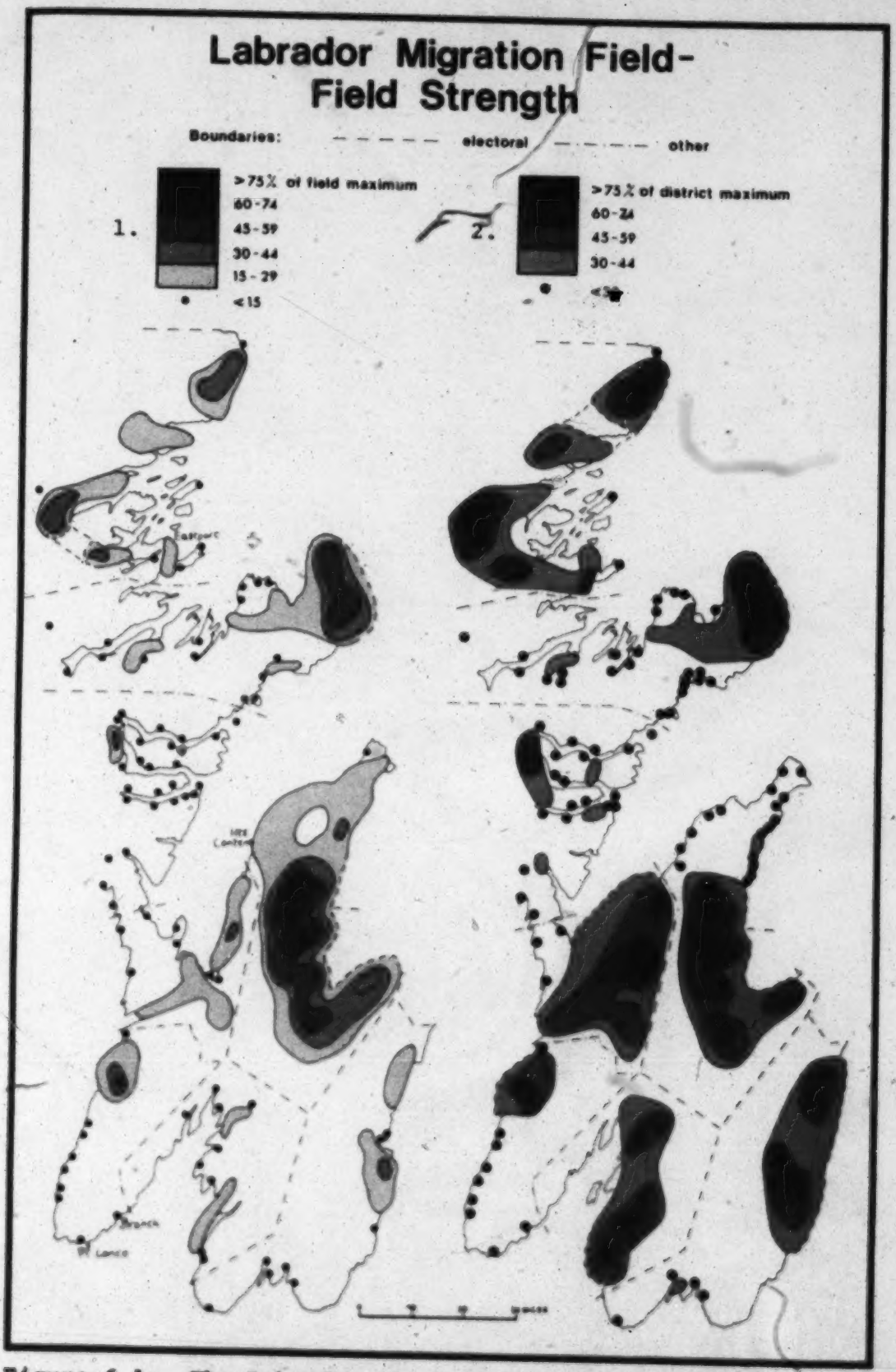

Figure 6.1: The Labrador Migration Field - Field Strength 1) as % of field maximum 2) as % of district maximum

circulation and information flow was dominant.[2]

Within each of these sub-zones a simple potential map was constructed with the observed frequency of Labrador migration from each settlement being registered as the source population. The 'force' of the information about Labrador emanating from each settlement to any other settlement was then calculated as the frequency of Labrador migration from the settlement of origin divided by its distance from the settlement capable of receiving information. Thus, for example, Catalina and Bonavista, eleven miles apart, recorded 44 and 74 migrants respectively. The 'force' of Labrador information contained in Bonavista and bearing on Catalina was assessed as 74/11, or an index of 6.73; the reciprocal force, that of Catalina on Bonavista, was 44/11 or 4.0. Calculations of this kind were made to establish the force of Labrador information bearing on each settlement from all other settlements in the sub-zone.

The raw scores derived from this analysis are, in themselves, largely meaningless. Therefore, the data were expressed as a percentage of the maximum value obtained, and

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[2] The emerging road patterns were taken from a series of road and rail maps covering the period from 1930-1966. The earliest maps used were those contained in the Amulree Royal Commission Report of 1933 (Maps 3 and 4). Perhaps the most useful, and most representative, as showing the emerging system in the period under discussion, is dated 1949 and is found in Parker, J., Newfoundland: 10th Province of Canada, London, 1950, endpiece.

plotted accordingly. Thus, the maximum value, found at Carbonear in Conception Bay, was recorded as 100%; Bonavista by comparison had a field strength of 64% and St. Mary's, in St. Mary's Bay, only 23%. These data are mapped in Figure 6.1.1 from which it is apparent that the Labrador information field is most powerful in Conception Bay, with a strong subsidiary centre in the Bonavista Peninsula. All the other sub-zones had relatively weak information fields though Bonavista North had several islands of moderate strength.

To complement this highly centralised picture, a second map was drawn (Figure 6.1.2) in which the raw values for each settlement were expressed as a percentage of the sub-zone maximum. This has the effect of maximising the power of local as opposed to broad zonal influences, and gives a more detailed impression of the information fields operating at the sub-zone level.

Of necessity, the delineation and interpretation of the Labrador information field rests on a number of arbitrary assumptions as, for example, to sub-zone boundaries, to modes of social and spatial interaction, and to the influence of information from outside the zone. However, if these assumptions, and the limitations they imply, are borne constantly in mind, it seems that the portrayal of the generalised information field is a useful heuristic device by which our understanding of migration as a spatial process may be refined.

The Causes of the Labrador Migrations

Against this general background a series of multiple stepwise regressions was run similar to those employed in the previous analysis of district migration. The aim of this procedure was firstly to examine the causes of Labrador migration, and secondly to study general out-migration to discover, in part, the relationship existing between the more specific Labrador movement and the overall level of out movement.

It was also the aim of this portion of the study to carry the analysis to the most detailed level possible. To this end the units of measurement chosen were the Census Enumeration Areas which, in Newfoundland, have an average population of between seven and eight hundred persons. The Enumeration Areas examined were those in the Labrador Migration Field which contained settlements with a greater than expected frequency of Labrador movement. These settlements were aggregated into the relevant Enumeration Areas and a fresh ratio of Labrador migration (observed to expected) was calculated for the larger unit. In some cases it was necessary to aggregate Enumeration Areas together to cover a single large settlement, as in the case of Carbonear or Placentia. In all, 111 settlements lying in 84 Enumeration Areas were melded into 67 statistical units for the purposes of this analysis, the average 1961 population in each unit being 896.

The prime dependent variable for this section of the

analysis was that of frequency of movement to Labrador, designated LABMIG. The index for this variable was the ratio, noted previously, between observed and expected movement to Labrador. In many cases, this index has the same value as calculated and depicted in Figures 5.2 and 5.3, but in some cases a settlement with above average Labrador migration was found to lie in an Enumeration Area together with a settlement of below average Labrador movement, or no movement at all. In such cases the level of the dependent variable was reduced to values of less than 1.0: this situation occurred in 14 of the 67 statistical units, and although the statistics utilised are in no way invalid, they do have the unfortunate effect of watering down and masking the true force of a number of strong transmission points for Labrador migrants.

The independent variables chosen were selected after careful consideration of the outcome of the previous regression analyses and also with a view to the objective investigation of themes raised subjectively during field work. In addition, in view of the fact that the vast proportion (circa 95%) of the Labrador migrants recorded were male, all the indices for independent variables, where appropriate, were selected from and against male base populations in the statistical units.

It will be remembered that the models explaining general out-migration for the time series 1935 through 1966 were heavily dependent on a small number of economic indices,

particularly those pertaining to labour force characteristics, and demographic structure, the chief of these latter being the age groupings. In the present analysis, the first of these classes of variables was reintroduced: the percentage of the male population classed as being in the labour force was included as LAFOMA, and the percentage of the male labour force engaged in fishing was again included as MLFFIS. Also included was the average income of the male labour force (AVINMA) and a measurement of the degree to which the labour force was engaged in full time employment (FLTEMP): full-time employment was operationally defined as working 40 weeks or more during the year.[3] It was hypothesised that LABMIG would rise as the proportions representing LAFOMA and MLFFIS diminished, and would in turn diminish as AVINMA and FLTEMP rose.

The strong secondary influences of age-groupings on migration frequency previously pointed out at the district level were not directly repeated for the small area analysis. It was felt that the relationship between age and migration was sufficiently self-evident for these independent variables to be omitted, and it was reasoned that their inclusion, though recording high levels of explanation, might obscure less obvious but no less interesting explanatory variables. In place of the direct measurement of age groupings, however,

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[3] In the initial analysis FLTEMP was found to reflect so much of the other variables, particularly AVINMA, that ultimately it was wholly eliminated from the regression.

an attempt was made to measure the general level of migration from the small statistical units by critical age groups. This was done by utilising the survival ratio method[4]: for each statistical unit, the male cohorts of 15-24 and 25-34 were examined over the period 1961-66, and calculations were made as to the depletion of each group. These variables were designated MG1524 and MG2534. This was a crude measure of net-migration for each of the age-groups concerned: in the case of MG1524, the data were relatively straightforward, only three of the 67 cases showing no net out-migration. The 25-34 age group however was more complex in its behaviour: 22 of the 67 statistical units demonstrated net in-migration and five recorded no movement at all. It was hypothesised that LABMIG would rise with advances in out-migration in both MG1524 and MG2534.

The independent variables measuring single status and sex ratios, found to be of subsidiary significance in the district analysis, were re-entered into the small area investigation. The proportion of the male population aged over 15 and single was again designated SIN15+, and the sex balance of the single population over the age of 15 was repeated as SIMARA (single male ratio). It was hypothesised that LABMIG would rise with advances in both SIN15+ and SIMARA.

During field work, much stress was laid by many of

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[4] Bogue, D.J., in Hauser, P.M. and Duncan, O.D., The Study of Population, Chicago, 1959, pp. 492-493.

those interviewed on education levels as a constraint on migration. This was particularly true in the case of the mining companies, at least one of which began its recruitment with the premise that all employees should have completed high school.[5] Given the relatively low levels of participation in secondary education in Newfoundland however this high aim was incapable of realisation and the mining companies quickly became less rigorous in their perception of acceptable levels of educational attainment. In a more general sense, it was recognised that lack of educational experience would inhibit movement to Labrador:

> "it has been found that Newfoundlanders are rather loth to take up permanent residence in Labrador...(one reason) is the absence of technical skills in our labour force...some of the skills of the mining industry eg. the operation of heavy equipment, are absolutely foreign to many of our workers, and they are of necessity at a disadvantage when competing for certain types of employment available in Labrador."[6]

There may have been some confusion of purpose as to what skills the mining companies actually needed in their Labrador development: the government's analysis specified technical skills, the mining companies began by calling for more or less academic skills (i.e. high school graduation). In practice the mining companies' demands were made at a time when technical and vocational education was barely beginning in Newfoundland, and their quasi-academic requirements

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[5] In Newfoundland, high school is completed at the end of Grade XI.

[6] Newfoundland, Report on Resettlement in Newfoundland, St. John's, 1960, p. 23.

were specified in default of any broadly based technical alternative.[7] For this reason, it was felt acceptable to measure the influence of education on Labrador migration by utilising the proportion of the male population who, in 1961, had attained at least the beginnings of a high school education (i.e. had reached Grade 8). This measure was designated HSPLUS and it was supposed that LABMIG would rise with advances in this index.

A further category of variable entered into the analysis attempted to measure the influence of location and distance on the frequency of Labrador migration. During field work and the preliminary analysis of the raw data, it became apparent that accessibility to a place of recruitment might be of crucial importance in explaining variations in movement. Personnel offices for all companies and organisations were located in St. John's: although recruiting trips were periodically made by the mining companies to other centres of the province, none of these centres was in the Labrador Migration Field. It was hypothesised therefore that Labrador migration would fall off with distance from St. John's and the road mileage from St. John's to each statistical unit was designated CAPDIS.

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[7] May, W.J., "Our Great New Technical Education System", in Smallwood, J.R. (ed.), The Book of Newfoundland, St. John's, 1967, Vol. 4, pp. 173-176. A small Vocational Training Institute had functioned in St. John's from 1946. In 1960 the decision was taken to expand Vocational and Technical training and between 1960-63, twelve institutions were built for this purpose across the province.

As a corollary to the influence of distance, it was felt worthwhile to investigate the potency of the local information field in explaining Labrador movement. To this end, the index of field strength was taken from the information field portrayed in Figure 6.1.1 and designated INFFLD. It is true that the use of this measure might be considered tautological to a degree in that the strength of the information field at any place is partly a function of the frequency of migration from that place. Considered thus, INFFLD would seem to be helping to explain the migrational frequency by the migrational frequency.[8] In practice however INFFLD is a great deal more comprehensive an index, measuring the total information available to a place on Labrador migration, rather than just the information available from inhabitants of the place itself. It was hypothesised that Labrador migration would rise with the increase in information available.

Finally, a variable was used to measure the degree of historic association between the Labrador Migration Field and Labrador. If, as Hägerstrand has suggested, "the migration field is to be considered as a feedback process of historical continuity"[9] then it becomes important to know the strength of former links between the areas being studied.

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[8] Hägerstrand had a similar methodological circularity to contend with in his examination of Stouffer's theory of "intervening opportunity" against the Swedish data. See Hagerstrand, T., in Hannerberg, D. et al (eds.), p. 121.

[9] Hagerstrand, T., op. cit., p. 150.

On a number of occasions in this study, clear evidence of close links between parts of Newfoundland and the Labrador has been established: these links date back to the 19th century, and were based on the annual floater and stationer fisheries. The links were especially strong between Labrador and Conception Bay communities. It was hypothesised that the strength of historic associations between particular communities and the Labrador would be positively reflected in the level of contemporary migration. The strength of historic associations with Labrador was measured for each settlement by calculating the proportion of the population going to the Labrador in the years 1900, 1910 and 1920, and taking the mean of these figures. This variable was designated LABFIS.

The initial procedure in the regression analysis for the small area data was to seek general levels of explanation for spatial variations in Labrador movement over the whole Labrador Migration Field. When all the 67 statistical units were deployed in the analysis, the simple correlation coefficients were as hypothesised, but the level of association was extremely low: the highest figure for r was .201. Consequently, the general level of explanation was also low, and the only two variables which appeared significantly associated with Labrador movement accounted for a mere 11.2% of the variation. The two independent variables called into the regression at this stage were SIN15+ and SIMARA, this arguing that single status and single sex ratios

were instrumental in influencing the dependent variable. The general level of explanation however was so slight that the analysis was discontinued as adding little to the understanding of Labrador migration.

At the same time, analyses were made of the complex of factors contributing to variation in MG1524 and MG2534 as separate dependent variables. The aim of this procedure was to establish the level of relationship between Labrador migration and the movement of specific age-groups, and to discover whether similar factors were operating in each case. In this segment of the regression however, some of the factors held to explain Labrador migration could not be associated conceptually with general migration and were therefore suppressed: these factors were INFFLD and LABFIS. The influence of MG2534 was also suppressed in the analysis of MG1524 as a dependent variable, and vice versa, as it was noted that there was a high level of association between the two.

The dependent variable MG1524 analysed in these conditions realised three significant independent variables which accounted for 26.7% of the spatial variation: these were AVINMA, SIN15+ and LAFOMA. Though still representing only a modest level of explanation the variables were significant at the 99% level. The more complex MG2534 however returned under analysis to an extremely low level of explanation: only two variables, HSPLUS and AVINMA were significant, and these

together accounted for a little over 10% of the variation in MG2534.

The poor performance of the independent variables in explaining migration levels is emphasised by the results set out in Table 6.1.

TABLE 6.1: EXPLANATION OF MIGRATION IN LABRADOR MIGRATION FIELD (n = 67)

Dependent Variable	Main Independent Variables	Level of Explanation
LABMIG	SIN15+** SIMARA**	11.2%
MG1524	AVINMA** SIN15+** LAFOMA**	26.7%
MG2534	HSPLUS** AVINMA**	10.0%

** = significant at 99% confidence level.
Source: author's own calculations; data categories described in Appendix 3.

The explanatory variables derived from this analysis do show some consistency, particularly when it is considered that the next most powerful variable entering into the regression of MG2534 is SIN15+, though it did not quite attain 95% significance. But with this entry in mind, there is a fairly clear pattern of repetition with SIN15+ and AVINMA variables variously 'explaining' all three categories of migration. Despite the statistical significance associated with these variables however, it was felt hardly worthwhile to pursue an analysis engendering such low levels of explanation, expecially as the number of cases considered was relatively high.

This being the case, a seemingly difficult problem was posed to which three possible explanations were examined. Was the poor explanatory power of the variables a function of the inadequacy of the variables themselves? Or was it the case that no general explanation was forthcoming i.e. that the processes being investigated were random, answering to no systematic influences? Or was it the case that the unit under consideration, the Labrador Migration Field, was irrelevant to the problems under investigation and, being considered as a whole, was masking high levels of explanation operating through different sets of factors in different sectors of the field?

As both of the first two alternatives posited appeared, from experience, to be improbable -- both the type of variable used and the systematic influences they engendered appeared to be valid in the earlier analysis -- attention was directed to the third possibility, that the Labrador Migration Field as defined was, under analysis, distorting and obscuring accurate levels of explanation.

Problems of this nature are not, of course, unusual in social and behavioural research: in essence, it is clearly recognised that a change in the size of the statistical or areal unit under analysis may result in profound changes in the results of the analysis, even though the same problems are being examined and the same data used.[10] But

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[10] See, for example, Duncan, O.D., Cuzzort, R.D. and Duncan, B., Statistical Geography, Glencoe, 1961, pp. 9-10, 60-80.

though this phenomenon is not uncommon, it is none the less disturbing: as Blalock has pointed out

> "Philosophically and theoretically it would be highly upsetting if we were to assume that the fundamental nature of the relationship between two variables changes with every change in units. For example, if we were to find a particular relationship...with states as the units of analysis, but a very different one using counties as units, we would be posed with a seemingly significant theoretical problem. We would also be unhappy theoretically if one could claim that a redefinition of the states, say into 75 units instead of 50, would markedly change the nature of the relationship between the two variables, as theoretically conceived."[11]

While this general statement is plausible for much behavioural research, it is difficult to see why it must apply of necessity to units which are geographically as opposed to merely areally defined. By 'geographically' is here meant those units possessing a coherence and regional integrity, which qualities may be submerged or cancelled out by aggregation into larger, more heterogeneous 'areas'. From the geographic point of view, accepting areal differentiation as a fundamental construct, it would appear unreasonable to define areas on the basis of a single dependent variable and always to expect high and ubiquitous levels of explanation from an otherwise heterogeneous field. It seems at least as inherently probable that one part of a field may record a high level of explanation through one set of factors, but that a contiguous, but differently

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[11] Blalock, H.M. Jr., Causal Inferences in Nonexperimental Research, Chapel Hill, 1961, pp. 98-99.

articulated, portion may record explanation through different factors. With this probability in mind, the Labrador Migration Field was disaggregated in order that a search might be made for different levels and modes of explanation in the different parts.

This probability was reinforced by reference back to the independent variables. It may be remembered that these variables were initially accepted as possessing universal validity. One variable at least however, that of LABFIS, was unevenly distributed to an extreme degree, so that three districts to the extreme south of the Labrador Migration Field (Ferryland, St. Mary's, and Placentia East) recorded no historical association with the Labrador as measured by LABFIS. Undoubtedly this contributed to a lowering of the potential for a general explanation.

Against this background, the Labrador Migration Field was subdivided into three areas. These separate areas were defined by elements of contiguity, knowledge of the districts concerned, reference to formerly observed patterns of regional integration (see Figures 3.6 and 3.8) and by subjective judgment of the role played by different variables (eg. the role of LABFIS described above). The areas defined by these criteria were Bonavista-Trinity North, Conception-Trinity South, and Ferryland-St. Mary's-Placentia East. As presented here, these areas are listed in a straightforward sequence of north-south location: it may be noted parenthetically that this is the order in which the areas

are most convincingly homogeneous and integrated.

The outcome of the regression analyses for these three separate areas proved much more satisfactory than that initially conducted for the Labrador Migration Field as a whole. The results of the regression are depicted in Table 6.2 which lists the variables contributing most highly to the explanation of the three categories of migration and an indication of the significance of these entries.

LABMIG was most cogently explained in Bonavista-Trinity North where nearly 62%[12] of the variation in Labrador movement was explained by variations in the strength of the information field, and in income and education levels. In Conception-Trinity South, the level of explanation was reduced, only 36.5% of the variation being accounted for by the most significant variables which were size of labour force, education, and distance from St. John's. Even this reduced level of explanation however was highly significant. In Ferryland-St. Mary's-Placentia East, a similar level of explanation (33.4%) could not be considered significant given the smaller number of cases on which the analysis was

[12] Table 6.2 records the percentage of explanation attributable to each independent variable in the conventional manner. The figures in parentheses however record a slightly different weighting for each independent variable: in the multiple regression process the initiative seized by the first independent variable entered profoundly affects the values attributed to succeeding variables. And yet the first variable entered may owe its prime position to only a slight and arbitrary superiority in zero-order correlation. In this analysis the significant variables, once decided on, were re-entered in all possible sequences to share out the advantages of primary entry, and the resulting levels of explanation were averaged out. These averaged levels of explanation are contained in parentheses. The overall level of explanation is not affected by this procedure.

TABLE 6.2: EXPLANATORY VARIABLES IN LABRADOR AND AGE-GROUP MIGRATION
(% explained)

	LABMIG			MG1524			MG2534		
Bonavista-Trinity North (n = 19)	INFFLD**	21.7	(35.0)	SIN15+	12.6	(11.2)	AVINMA**	6.8	(15.8)
	AVINMA**	17.4	(18.1)	HSPLUS	3.4	(3.6)	SIMARA**	19.7	(17.2)
	HSPLUS**	22.6	(8.6)	LABMIG	2.1	(3.4)	HSPLUS*	10.6	(4.2)
		61.7			18.1			37.1	
Conception-Trinity South (n = 30)	CAPDIS**	15.5	(16.3)	LAFOMA*	14.8	(10.5)	HSPLUS**	10.0	(11.6)
	LAFOMA**	9.7	(7.6)	AVINMA**	10.3	(14.0)	AVINMA	6.6	(5.0)
	HSPLUS*	11.3	(12.6)	HSPLUS	7.5	(8.8)			
		36.5			32.6			16.6	
Perryland-St. Mary's-Placentia East (n = 18)	SIN15+	14.2	(13.3)	SIMARA**	20.8	(14.6)	SIMARA**	51.5	(38.8)
	SIMARA	6.8	(8.0	LABMIG*	15.7	(15.9)	HSPLUS**	12.0	(10.0)
	MG1524	12.4	(12.0)	CAPDIS	7.8	(13.8)	CAPDIS*	8.4	(23.1)
		33.4			44.3			71.9	

* = significant at 95% confidence level.

** = significant at 99% confidence level.

Source: author's own calculations.

based. It is interesting however that the variables selected in this latter area as contributing most highly to spatial variation in the dependent variable, were completely different from those of the two northern areas: in Ferryland-St. Mary's-Placentia East LABMIG was associated with demographic rather than economic indices.

Some comment is perhaps appropriate on the inferences that can be drawn from these statements of statistical relationship. Despite the difference in levels of explanation in Bonavista-Trinity North and Conception-Trinity South, there was a substantial overlap in the mode of explanation offered by the regression for the two areas i.e. the type of variable entering into the regression equation. Both areas showed education (HSPLUS) to be important as explanatory of Labrador migration. Both indicated that an economic indicator was highly significant (AVINMA and LAFOMA). Most interesting however was the fact that spatial and informational factors were dominant in both areas: in Bonavista-Trinity North, variations in the strength of the information field were paramount in explaining variations in Labrador movement, but in Conception-Trinity South, distance from St. John's was the most powerful factor.

This distinction is probably rooted in a logical system of spatial order: in the more thickly populated Avalon Peninsula, within which area Conception-Trinity South is subsumed, connection with and dependence on the capital city of St. John's is an important element in patterns of

circulation.[13] The more remote settlements of Bonavista-Trinity North however were beyond the critical distance inside which communication with the capital was both convenient and necessary, and, not unnaturally, local patterns of circulation and information were more powerful. Parenthetically, it is interesting that no significant association was elicited at the settlement level between LABMIG and LABFIS, the index of historical involvement with the Labrador fishery.

The levels and modes of explanation for the other categories of migration demonstrated both contrasts and parallels with those offered for LABMIG. Bearing in mind always that the variables entered to explain MG1524 and MG2534 were more restricted than those held to account for LABMIG, there is generally an inverse relationship between the explanatory power of the variables for Labrador migration and that for the other categories of migration: in general, where LABMIG is well explained the level of explanation for MG1524 and MG2534 falls off, and vice versa. Most striking is the case of Ferryland-St. Mary's-Placentia East where the sequence moves from modest levels of explanation for LABMIG (derived from variables of uncertain significance) to a very powerful explanation of MG2534 in which three variables account for nearly 72% of the migration.

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[13] This inference, incidentally, signals a shift from the situation in 1935-45 (Chapter III) which showed a relatively poor integration of Avalon districts.

This phenomenon clearly expresses something of the structural relationship between Labrador migration and migration in general. In brief, Labrador migration is not wholly explained by the factors which explain general migration: although the same explanatory factors are often repeated, they seldom offer the same levels of explanation. More pointedly, there is seldom mutual explanation of one category of dependent variable by the other category: LABMIG only twice enters into the explanation of the age-group migration and then only once at a significant level (Ferryland-St. Mary's-Placentia East), and age-group migration never enters the explanation for LABMIG at an acceptable level of significance.

Another phenomenon of general interest is the type of the explanatory variables entered for the different areas. The distinction remarked for LABMIG between the two northern areas on the one hand and Ferryland-St. Mary's-Placentia East on the other, is persistent through the analysis of MG1524 and MG2534. The explanations for Bonavista-Trinity North and Conception-Trinity South remain dominantly economic and educational; in Ferryland-St. Mary's-Placentia East, the explanations are never in terms of purely economic factors, but tend to be demographic and locational.

The Residuals from Regression

Maps of residuals from regression were prepared for most of the analysis. In principle, the residuals, which measure positively and negatively the variation in the

dependent variable unexplained by the regression, should be randomly distributed and mutually independent. However if the residuals are patently not randomly distributed, both as to size and direction, further explanations may be sought for the grouping of like residuals. In the present analysis, this was done by examination of the index-plot calculations[14], in which the residual value is plotted against specified independent variables.

The residuals from the regression accounting for LABMIG in Bonavista-Trinity North are shown in Figure 6.2. Eight of the statistical units were underpredicted, eight overpredicted and three were well predicted, actual LABMIG deviating from the computed value by less than .20 of the standard error. Grouping of residuals of similar magnitude and direction was infrequent although this might be attributed to the low number of cases thinly scattered over an extensive area. In the Bonavista Peninsula there was a grouping of four contiguous centres of overprediction though examination of the index-plot output indicated no single variable in which these units were clearly set off from the other units. The regression for MG2534 showed slightly more underprediction and fewer cases of overprediction but again apart from the Bonavista Peninsula, there were no strong deviant groupings.

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[14] BMD02R Multiple Stepwise Regression, Health Sciences Computing Faculty, U.C.L.A., Revised February 20, 1970.

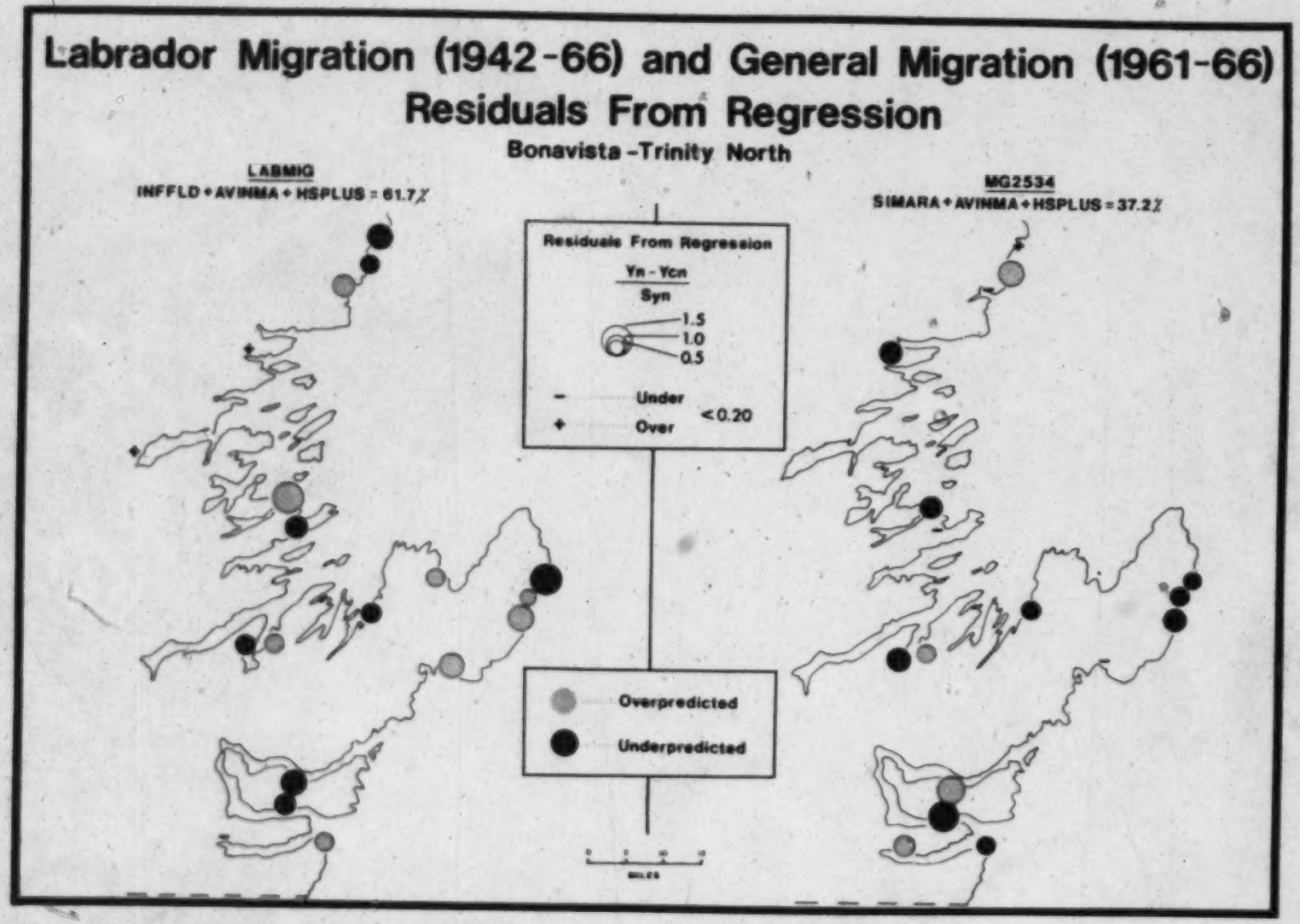

Figure 6.2: Residuals from Regression - Bonavista-Trinity North

The residuals from regression for LABMIG in Conception-Trinity South (Figure 6.3) showed a more marked grouping. The major centres of the area, Carbonear and Harbour Grace, together with the important migrant source of Victoria, were well predicted. The central portion of the area tended to be overpredicted, as did the settlements of Trinity South, while underpredicted groupings were found in the northern and southern sections of the area. Roughly the same patterning was found for the residuals from regression on MG1524, though this was not the case in Trinity South.

The explanation for this phenomenon is not clear but it may be postulated that the more diversified opportunities of the larger towns acted to inhibit out-movement, whereas workers in the smaller more peripheral settlements had fewer potential alternatives to out-movement. There was also a strong association in the index-plot output between SIN15+ and SIMARA and the residual: the degree of underprediction realised by the formula was seen to be strongly associated with single status and, to a lesser extent, with sex ratios.

The residuals from regression for LABMIG in Ferryland-St. Mary's-Placentia East did not display strong grouping, but because of uncertainty as to the level of significance of this portion of the analysis, they are not portrayed here. The residuals from MG1524 and MG2534 however, presented in Figure 6.4, are of particular interest for they show the most striking concentrations of similar deviations in the whole Labrador Migration Field. For

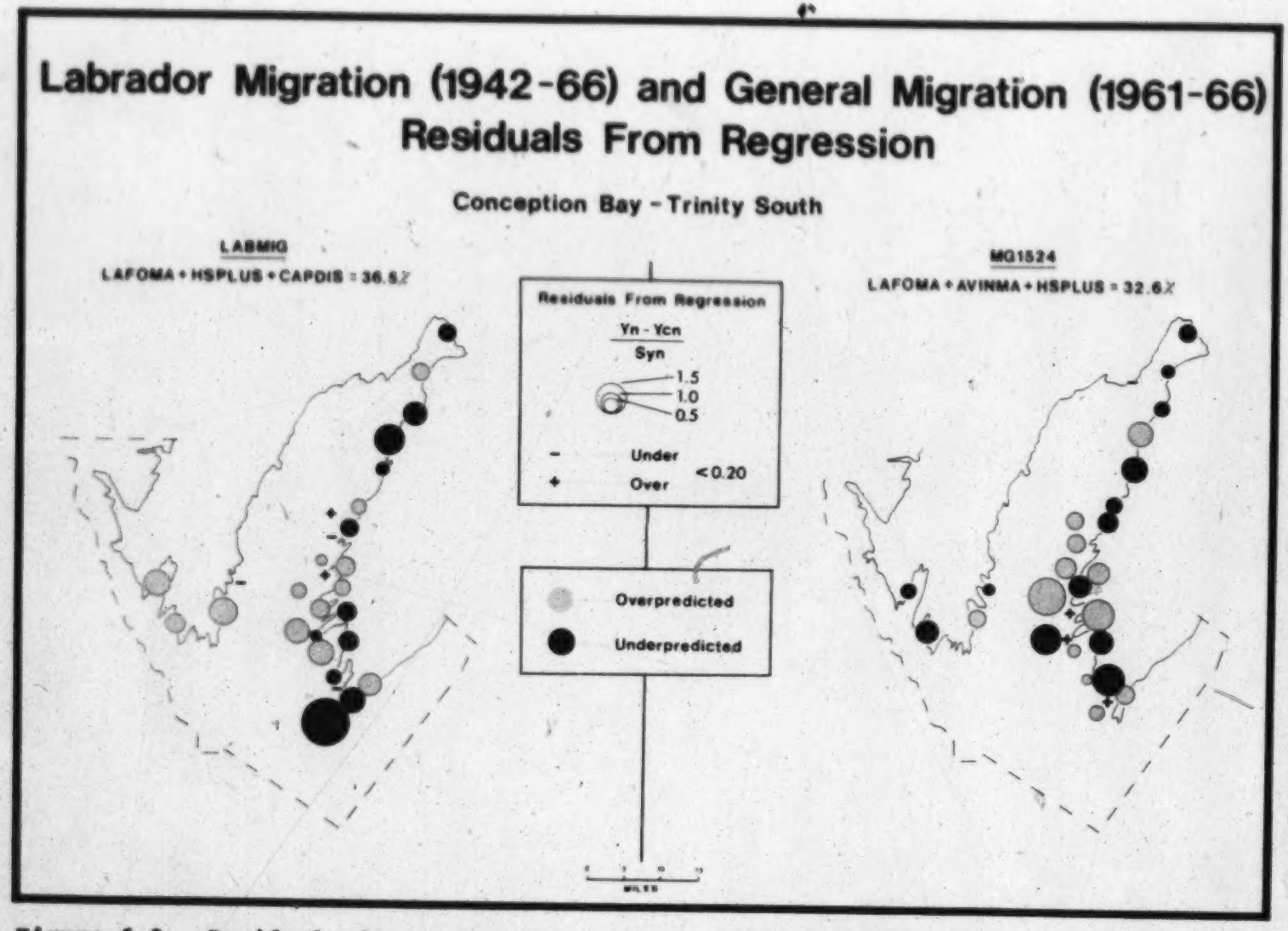

Figure 6.3: Residuals from Regression - Conception Bay-Trinity South

MG1524, Ferryland was dominantly overpredicted and St. Mary's heavily underpredicted. For MG2534, St. Mary's was almost entirely underpredicted, Placentia East similarly overpredicted -- this despite the extremely high level of explanation engendered for the area as a whole. Again, no single variable on the index-plot output could be held to account for these concentrated residuals, but the groupings do suggest that to a degree, the regionalisation of Ferryland-St. Mary's-Placentia East is a little artificial; the three districts making up the area are individually more coherent and independent than perhaps any in the other areas. The fact that they are usually grouped is perhaps a reflection on their contiguity and their common cultural heritage (almost wholly Newfoundland-Irish-Catholic) which may give a misleading impression of functional homogeneity.

One final theme may be worth noting from the analysis of residuals from regression and the index-plot. A careful examination of these data shows a degree of association between the residuals for LABMIG on the one hand and the values for MG1524 and MG2534 on the other. The nature of the association is depicted in Figure 6.5: in essence, the more the tendency towards net in-migration (or, as a corollary, the lower the net out-migration), the greater the tendency to underpredict LABMIG. This association varied in strength from area to area, being strongest in Bonavista-Trinity North.

It is not easy to say what this association portends,

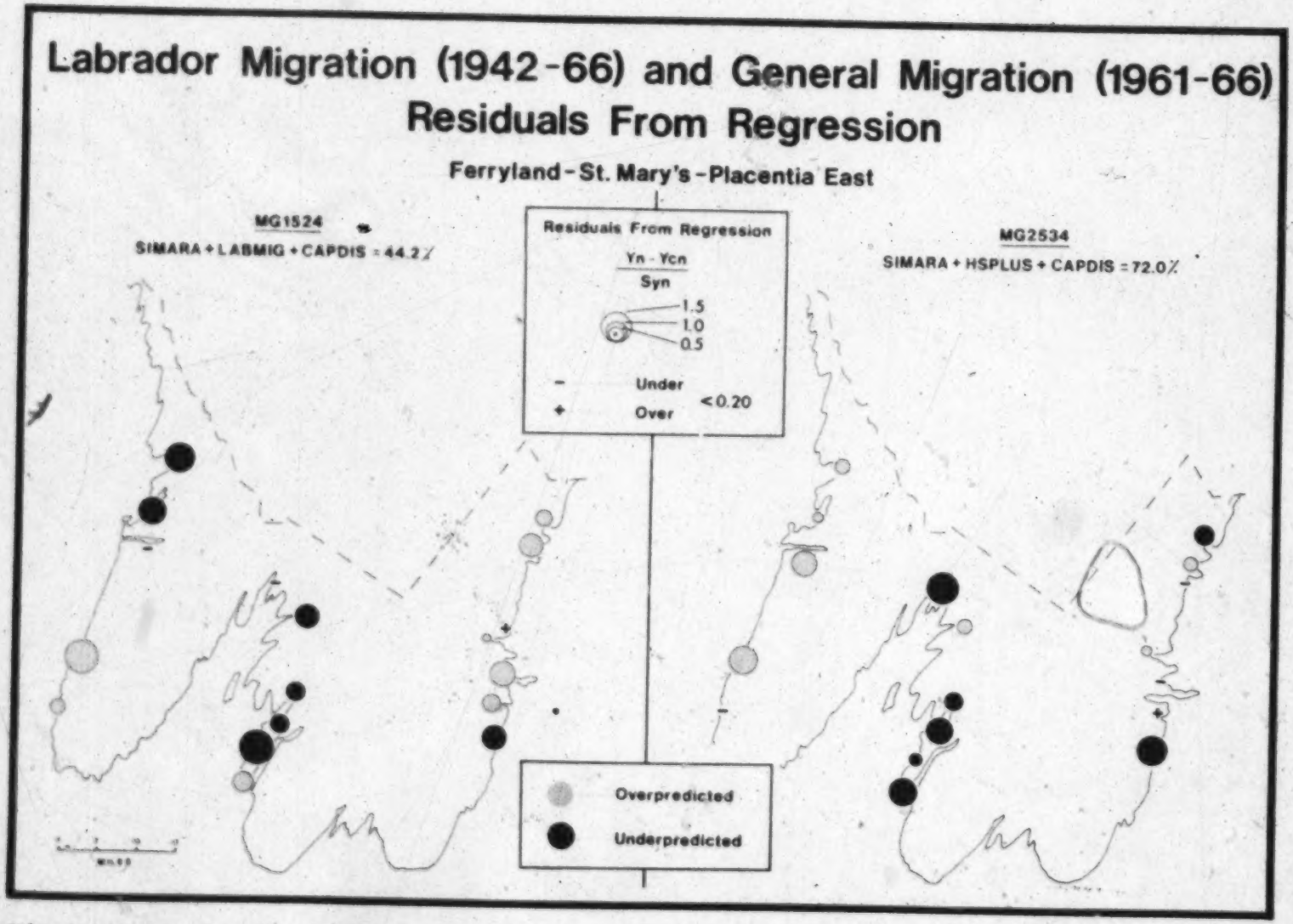

Figure 6.4: Residuals from Regression - Ferryland-St. Mary's-Placentia East

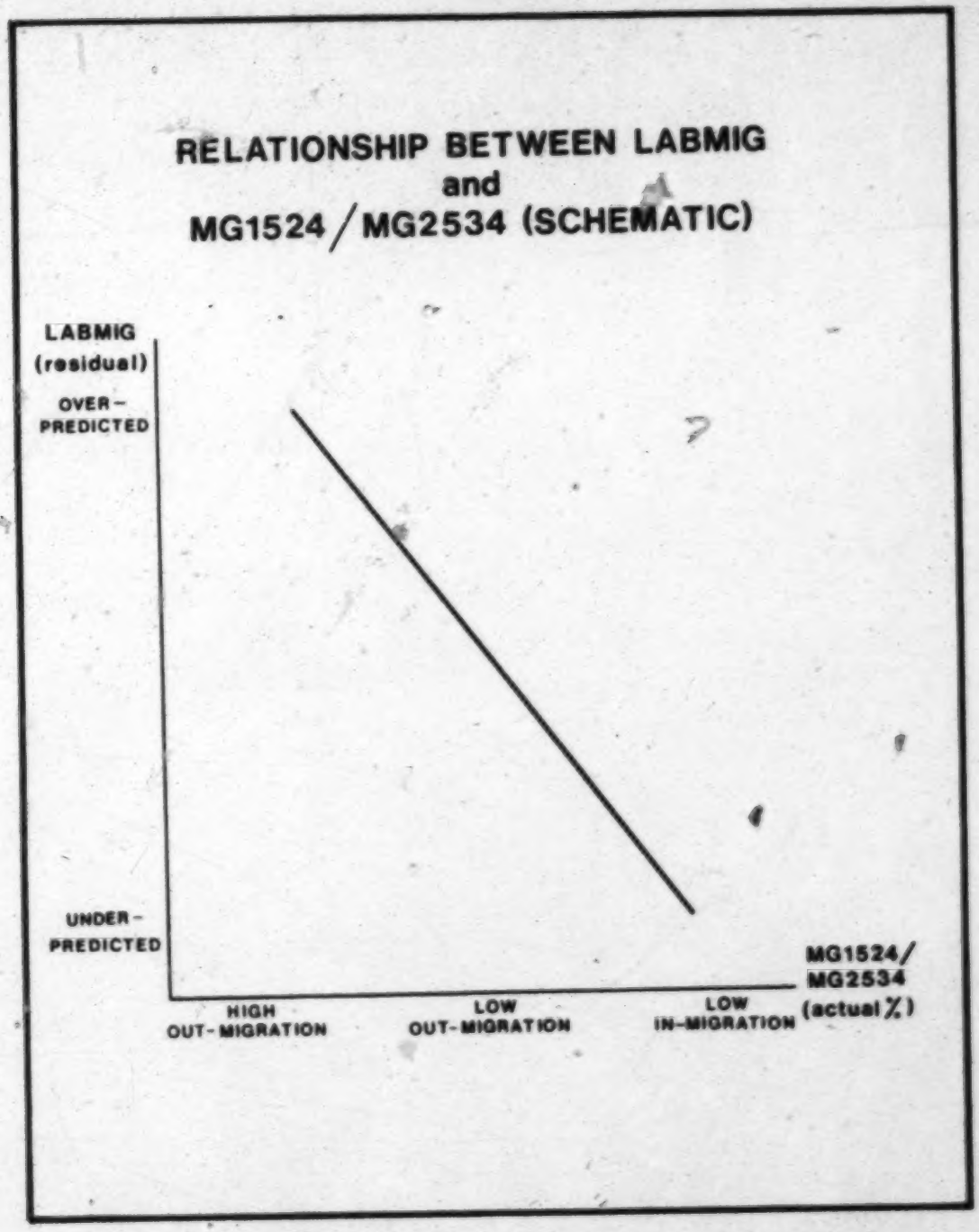

Figure 6.5/ Relationship between Labrador Migration and General Migration

but it may be suggested that it reflects the degree to which LABMIG is associated with internal circulation rather than with definite out-movement. It is clear from the empirical evidence that much, if not most, of the movement to Labrador is circulation (temporary and/or seasonal) rather than settlement. Places with a low out-migration may be meeting their population pressures by sending workers to Labrador for short periods without seeing them recorded in the statistics as out-migrants.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The population of Newfoundland has been, and still is, dominantly rural in its distribution. It grew rapidly in the first half of the 19th century, but beginning in the 1850's, the rate of growth slackened as net out-migration became common. High rates of natural increase however ensured that most districts of the island continued to increase in population, particularly after Confederation with Canada in 1949. But despite general population increases only one district, Labrador, has persistently displayed high levels of net in-migration in the recent past.

The districts in the most densely populated portion of the island, the Avalon Peninsula, and particularly Conception Bay, were amongst the first to experience substantial out-migration. But out-migration was not undertaken until all other possibilities had been attempted. An alternative response to the overcrowding which threatened the rapidly increasing populations was the prosecution of the seasonal migrant fishery on the Labrador.

A further alternative response was a diminution of fertility, although this was as much a result of out-migration as a positive response to it. Both responses were employed in Conception Bay, but there is some evidence that in the districts of the Southern Avalon (particularly Ferryland), which did not prosecute the Labrador fishery, fertility diminution and direct out-migration were the only responses.

The significance of the Labrador fishery migrations waned during the twentieth century: an increasing population and a more diverse economy meant that the seasonal movement to the North became of less moment to the colony as a whole. Even so, in the examination of levels of regional integration for 1935-45, the associations between Labrador and Northern Avalon were the first (i.e. strongest) non-contiguous links to emerge from the Analysis. This exception becomes the more significant when it is seen to occur within a generally orthodox series of migration patterns and structures.

After the Second World War out-migration from the rural districts persisted as a significant element in Newfoundland's population geography. Even so, population losses at the district level were rarely encountered down to 1966, because natural increase

continued at even higher levels. Perhaps the most significant change during this later period was the shift in the apparent explanation for rural out-migration: 'negative' forces 'pushing' surplus rural populations from their areas of origin appear to have waned in influence and by inference, the 'positive' or 'pull' factors at the destinations available to potential migrants appear to have become more powerful. This transition, together with more purely demographic changes, is of importance in any assessment of the significance of Copes' analysis.

It is no coincidence that during the period in which these 'positive' or 'pull' factors appear to have become operative, Labrador was once more reasserting itself as a powerful focus of attraction for migrants. Since 1942, development in Labrador had proceeded apace, but in a different medium from that associated with the traditional Labrador fishery. For institutional and corporate reasons however, island-Newfoundlanders were largely excluded from participation in the Labrador developments, and in-migration to Labrador was (1935-56) dominated by people from other provinces. This phase however was temporary, and changes of political and corporate emphasis in and after 1959 meant that many more rural Newfoundlanders were able to move to Labrador.

The field from which these migrants were recruited was not island wide. It was restricted to the Avalon districts and some districts of the North East Coast. The area of heaviest migration frequency was in the districts of

Conception Bay, and this core was closely coincident with the area formerly so heavily dependent on the Labrador fishery. There were in addition extensions of the field into areas not previously associated with Labrador, particularly the districts of the Southern Avalon.

The search for explanations of the Labrador movements however did not suggest any direct causal relationship between the common fields of traditional and contemporary Labrador movement: the association appeared to be coincidental rather than causal. More potent levels of explanation were found in economic, educational and locational indicators. The field of Labrador migration however was not homogeneous, consisting rather of several differently articulated zones which offered somewhat different levels and modes of explanation for the frequency of Labrador movement. Perhaps the most interesting generalisation to emerge from this particular finding is that Labrador migration from the districts of the Southern Avalon, which constitute the more recent extension of the traditional migration field, appeared to be associated with a set of conditions very different from that found in the more traditional centres of Labrador migration.

It is not too difficult to make an appraisal of the empirical findings of this study: more problematic and more important however are the general and theoretical interpretations drawn from the empirical analysis and the

significance imputed to those interpretations. A consideration of the foregoing analysis suggests that the Newfoundland experience throws some light on three interconnected themes which are central to the study of migration and population geography - these themes are those of the mobility transition, the migration field and the migration region. Inferences and interpretations made on these themes from the analysis of the Newfoundland data have a potential significance which is both theoretical and applied.

The Mobility Transition in Newfoundland

The mobility and out-migration of Newfoundland's rural population may be perceived in part as a spatio-temporal process. The peoples who flooded into Newfoundland in the early part of the 19th century added to, or perhaps created, population pressures in the already occupied Avalon Peninsula. As the spatially restricted districts of the Avalon filled up a movement began to the north and west to occupy the scantily inhabited fringes on the more remote coasts. This phase of movement was in full swing by the 1850's, only three or four decades after the major incursions. In general it was the districts closest to St. John's, the major point of entry, which filled up and overflowed most quickly.

The classic process of filling and overflowing seems to accord well with the final stages of Phase I in Zelinsky's Mobility Transition which provides for "a rapid, massive buildup in rural numbers".[1] More particularly, it reflects closely Zelinsky's appraisal of Phase II in the Transition which comprehends

> "(1) Massive movement from countryside to cities, old and new.
>
> (2) Significant movement of rural folk to colonization frontiers, if land suitable for pioneering is available within country.
>
> (3) Major outflow of emigrants to available and attractive foreign destinations ... "[2]

In the Newfoundland case, it seems probable from the evidence that items 2 and 3 were more important than item 1. It may be further suggested, though with less conviction, that item 2 was dominant in the districts of the Northern Avalon, the seedbed of northern colonisation, and that item 3 was the most significant element in the districts to the south of St. John's, the heartland of the Newfoundland-Irish Catholic population. But whatever the destination of the movement, it seems clear that out-migration did follow a spatiotemporal pattern which was mirrored in the sequences outlined for fertility, mortality and age-structure. The pattern followed was similar to that demonstrated by Zelinsky in an impressive

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[1] Zelinsky, W., "The Hypothesis of the Mobility Transition", Geographical Review, 61, 1971, p. 236.

[2] ibid. p. 230

compilation of evidence for locations as various as Brazil, Argentina, Australia, the United States, England, Scotland, Japan, Czechoslovakia, Italy, the Netherlands, Greece and Sweden.[3]

This characteristic pattern, which is so frequently attested as to be classed perhaps as a process, is described by Zelinsky as "an outward spatial-temporal propagation of higher mobility"[4] and is associated by him with "the first readily portable elements of modernisation"[5] as these elements diffuse outwards from the centres of innovation. While the pattern, or process, is apparent in 19th century Newfoundland, it is less apparent that the cause lay in the progress of the elements of modernisation, at least within the colony. It seems equally probable that a simple overcrowding of the resources available in the spatially-restricted Avalon accounted for the increasing volume of out-migration. It might instead be suggested that an absence of modernisation was the stimulus to movement in that increasing population could not be accommodated at the available levels of technology. Given greater modernisation, and more advanced technology, it is by no means certain that the outflows would have been so substantial.

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[3] ibid. p.p. 238-241

[4] ibid. p. 239

[5] ibid. p. 241

This last point is worth a little elaboration for it qualifies our understanding as to how the Mobility Transition may have functioned in rural Newfoundland, and as to its significance. It is explicit in Zelinsky's argument that the progress of modernisation and the rise in mobility are positively associated: "the onset of modernization ... brings with it a great shaking loose of migrants from the countryside",[6] which follows the diffusion of modernisation in a spatiotemporal progression. This concept of a 'shaking loose' invokes a potent imagery, but it is not altogether appropriate to describe the situation in rural Newfoundland: it implies a positive force that can hardly be attributed to the abstract notion of modernisation alone. In truth, the intermediary functioning between modernisation and migration has to be a series of overt political or economic acts which serve to 'shake' population (i.e. to redistribute people spatially) into the new niches made available by the modernising process.

The inspiration for this type of reasoning is not far to seek. Zelinsky himself cites the example of Britain where Enclosure fortuitously made heavy contributions to the urban labour force needed to sustain a burgeoning Industrial Revolution.[7] With rare exceptions,[8] such acts

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[6] ibid. p. 236

[7] loc. cit.

[8] The Federal-Provincial Household Resettlement programme may be seen as a half-hearted latter-day attempt in this direction.

have been missing in Newfoundland's population history and geography. It is much more realistic to think of out-migration in Newfoundland as a response to the increasing pressure of population on resources, accompanied by a lack of modernisation which might have raised the island's capacity for supporting people. The spatiotemporal progression in the spread of migration existed independently of the spread of modernisation and reflected rather the sequence and length of time since primary settlement.

In fairness to Zelinsky, it should be stated that he envisages alternative possibilities to the traumatic 'shaking loose' discussed above. One such alternative, by which people remain on the land rather than leaving, is found in the more intensive modes of production characterised by 'agricultural involution'. But more relevant for the present discussion would be the alternative of "a less common strategy (combining) part-time employment on the farm with work in town, a form of commutation that may precede later migration."[9] It is suggested here that this notion is particularly applicable to the Newfoundland situation. If fishing is substituted for farming this alternative becomes a reasonable description of the plural adaptation assumed by many Newfoundlanders, particularly since the advent of a

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[9] Zelinsky, W. op. cit. p. 236

cash economy has rendered the simple rural subsistence economy less attractive. It is in this respect that modernisation has had a significant effect on rural out-migration but it should be emphasised that it is a belated, latter-day effect and was not a cause of out-migration ab initio.

The Migration Field and the Migration Region

The mobility transition by its very terminology invokes a suggestion of fluidity and dynamism operating contemporaneously through space and time. The same may be said of the descriptive designations "migration field" and "migration region" although compared to the "mobility transition" these are relatively wooden constructs. This comparison is made not merely for the sake of idle observation, but because it is suggested that it reflects different levels of theoretical adequacy. The concept of the migration field does, it is true, invoke an image of change through both space and time. Hägerstrand noted for example that one "peculiarity of the observed migration fields (was) their steadily increasing extent as time passes".[10] Although the rate of increase varied in his case studies, sometimes being "slow and limited", sometimes "explosive",[11] it was an ubiquitous feature, attributed broadly to the growth of mobility and the accompanying increase in informational feed-back.

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[10] Hägerstrand, T., in Hannerberg D. et. al. (eds.) Migration in Sweden: a Symposium, Lund, 1957, p. 131.

[11] ibid. p. 132

Asymmetry in the rate of growth of particular migration fields was attributed to cultural barriers such as language and religion, or economic carriers such as expanding transportation networks.

A similar spreading of the Labrador Migration Field may be perceived. The original nucleus of interest in Labrador lay in the districts of Carbonear, Harbour Grace, Port de Grave and Harbour Main. This core expanded, or at least became less concentrated, in the early 20th century as the districts of the North East Coast became proportionally more dependent on the Labrador. During the mid-20th century expansion of Labrador however, the districts of the Southern Avalon became, for the first time, heavily involved in the transmission of population to the North. In some ways, this latter day extension of the Labrador Migration Field appears stronger than the older established portions of the field, at least in proportion to its small population, though the old core still transmits a numerical majority of migrants. This recent extension of the Labrador Migration Field probably reflects the growth of the transportation network, and to an indefinable degree the diminution of cultural barriers. Finally "the archipelago of relatively dispersed contacts"[12]

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[12] ibid. p. 30

of Hägerstrand's migration field is reflected in the Labrador Migration Field in the existence of detached points such as Stephenville and White Bay North.

The limitation of the concept of the migration field lies in its structure rather than in its morphology. The empirical analysis of the Labrador Migration Field for example suggested that despite superficial similarities in the field (defined by the rate of transmission of migrants) it possessed no deepseated functional integrity. It was rather a collection of contiguous districts or sub-zones in which the rationale for association with Labrador was varied: at best, the rationales in particular sub-zones overlapped, at worst they seemed utterly discrete. In essence, the migration field may be thought of as a useful descriptive, perhaps ascriptive, entity. It is ordered largely by reference to a single focus (a point or area in space) but this spatial ordering does not necessarily imply any functional coherence. Two further refinements to this analysis might be suggested: that functional coherence diminishes with the spreading of the field through time, and that functional coherence is in any case less likely in a field focussed on an external destination (i.e. one not contained within the field itself) as is the case in the Labrador Migration Field.

If these assessments of the migration field can be accepted for the time being, it yet remains to comment

on the concept of the migration region. Clearly, although the migration field and the migration region rely on different mechanisms, the concepts of migration field and migration region are not mutually exclusive. Two possibilities may be posited. Some migration fields, like the Labrador Migration Field, may be externally focussed: this type of field would by definition be inimical to the development of a strong migration region. In essence, the stronger the externally focussed field, the weaker would be the potential migration region dominated by internal movement. A logical outcome of a strongly growing externally focussed migration field contained within a migration region would be that, in time, the migration region would wither away possibly to be incorporated anew within a larger migration region constituted by the former migration field and its focus. As a corollary, a migration field with an internal focus may foster the development of a migration region for in such a case the mechanism of the field would be working to complement the internal circulation vital to the sustenance of a migration region.

The evidence for migration regions as operative elements in the population geography of Newfoundland is scanty, being limited to one set of data for a restricted period of time. Largely for this reason, migration regions were admitted only tentatively, and were perceived as

perhaps existing at different levels of strength. An important question invoked in the discussion of migration regions concerned the degree to which these phenomena were self-sustaining and "immutable", for if this were admitted, then migration regions would become more than arbitrary statistical constructs: they would in fact become crucial bases for socio-economic planning.

It was remarked in the empirical analysis of Newfoundland's migration regions that, of the regions nominated, the South Coast was the most coherent and strongly integrated. The lowest levels of integration were found in the migration regions suggested for the North East Coast and the Avalon Peninsula. It would be tempting to attribute this contrast to the influence of the externally focussed Labrador Migration Field which occupied so much of the North East Coast and Avalon, but to do so would be overstating the evidence: in the period for which migration regions were studied in detail (1935-45) the Labrador Migration Field was relatively weakly developed and it can not be justifiably stated that Labrador movement was specifically the cause of the low levels of integration.

That there were differences between the regions described however, and that the differences persisted is attested independently by Brox, and attributed by him to ecologic variations:

> "I will consider the islands in Bonavista Bay, where resettlement has begun, with the scattered outports on the South Coast, where it has not started yet.

> The Bonavista Islands are closer than the South Coast settlements to St. John's, Grand Falls, and Gander, whether one measures the distance in miles or in travelling time. However, values are spread, modified, or maintained through human interaction and not by geographical distance. As far as I know, the inhabitants of the Bonavista Bay Islands were away from their settlements during long periods of the year, whereas the South Coast population hardly ever leave their communities. This difference can be explained with reference to ecology; the resource distribution is very different.
>
> The simple fact that the Bonavista men had to leave the islands to work would, of course, make them more likely to resettle, assuming that they wanted to spend as much time as possible with their families, cut costs, and so on. The South Coast fishermen, on the other hand, were able to be self-employed at home. Moreover, since the islanders in Bonavista Bay came to interact with mainland people, and given that values are modified and maintained by interaction, it is probable that their values would tend to become increasingly like those prevalent in the urban, hierarchically organized society. At the same time, the South Coast fishermen mainly interacted with each other, maintaining kinship and neighbourhood relations and reinforcing traditional egalitarian values." [13]

Granted then that such differences existed, and persisted, between migration regions it remains true that if migration fields, particularly those with an external focus, tend to grow through time, the net effect will be the weakening or elimination of the migration regions, thus vitiating their utility as development foci. The only way that migration regions could maintain their integrity against the poaching proclivities of a series of growing migration

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[13] Brox, O., Newfoundland Fishermen in the Age of Industry: A Sociology of Economic Dualism, St. John's, 1972, p. 64.

fields would be if total migration, in terms of numbers, was growing through time: the Newfoundland evidence on this topic is slender[14] but the available data does not support the notion of a massive growth in mobility. The balance of probability, inferred from known developments in circulation patterns and facilities, is that Newfoundland's migration regions are shifting and widening, relatively weakened by the trespasses of the migration fields.

Migration, Applied Geography, and Social Science

The concepts discussed above may be nominated as three emerging organising concepts in the branch of population geography concerned with migration. In brief, it may be said that migration in Newfoundland and Labrador may be understood as embracing a relatively uncommon facet of the mobility transition. The concept of the migration field is useful in ordering, at an elementary level, some of our knowledge about migration. The notion of the migration region is interesting but diminishes in potential significance as the strength of the migration field rises.

The question may reasonably be asked why it is necessary to weigh these concepts so thoroughly, to turn them, as it were, on their heads in an attempt to see how and why they reflect in true measure the phenomenon of

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[14] The only statistics available are for net migration but, at the district level, these shown no pronounced increase over the long term.

migration in Newfoundland. The answer is relatively simple - migration is crucially important at both public and private levels. The scale and direction of migration is a sympton of the state of social and economic health of a place or a society. In an age when governments are becoming increasingly solicitous of social and economic well-being, it is important that particular migrations should not be interpreted through the prism of inappropriate theory or misapplied concepts. In this sense the study of migration may easily become, to use an unfashionable term, an exercise in applied geography.

Zelinsky has wisely counselled against what he calls "the spurious precision of numbers".[15] For all that, it is inevitable that in the study of population and migration, numbers will provide a large portion of the evidence, and statistical methods will inform the core of the analysis. This study provides no exception to that rule though often the statistical data are poor and the cases few. It is in the interpretation of the significance of numbers however that the researcher makes his main contribution. There is unfortunately great temptation on the part of the social scientist to make pronouncements for which his limited data and narrow research design are an unsure foundation. At these times, it is as well that the researcher sit back and

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[15] Zelinsky, W., op. cit. p.

consider the admonition of Auden in his 'Hermetic Decalogue':

> "...Thou shalt not sit
> With statisticians nor commit
> A social science"[16]

The urge to 'commit a social science' on the basis of incomplete analysis is too infrequently avoided.

The cultivation of academic detachment through the medium of statistics may have as a corollary the development of undeclared value judgments which affect radically the interpretation of research. It is implicit in some migration research for example, that migration is 'good' for the migrants, and for the sending and receiving societies. In even more research, migration is implicity seen as 'natural' or 'inevitable'. Some migration no doubt is good for all concerned; some migration is inevitable: it would be false to deduce however that all migration is inevitably good, and research conducted on this mistaken and unstated premise is bound to 'commit' an incomplete piece of social science. It is easy for example to suggest that because migration is rooted in economic deficiencies it is both good and inevitable for the people and societies concerned. Suggestions of this kind have been frequent in Newfoundland. They are however, if not incorrect, at least incomplete, and as such they are profoundly unhelpful.

There is enough evidence from the long term empirical analysis in this study to suggest that widespread

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[16] Auden, W.H., "Under Which Lyre" in Nones, London, 1952, p. 62.

out-migration resulting from economic deficiencies is not an inevitable process of straight-line devolution. Factors other than the purely economic enter into the reckoning: economic causation is only crucial if economic policy is seen as a constant. This thesis has been most elegantly set out, in an appropriate geographic framework, by Brox:

> "I will argue that it has not been proven that a scattered population is necessarily an impediment to economic progress in terms of the general increase in living standards. On the other hand, there are certainly strategies for economic development which presuppose or imply concentration or urbanization of the population, strategies that are difficult to pursue if most of the population lives outside cities, while at the same time, having full political rights. I choose, however, to treat economic policy as a variable factor, which representative political institutions have control of, and the settlement pattern as a given factor." [17]

If, as Brox points out, the political institutions are able to manipulate economic policy as a variable, then it follows that these policies can be deployed to slow out-migration if and when population losses are seen to be having a deleterious social impact. Fragments of evidence from the examination of past migrations suggest that from time to time such policies have been either purposely, or fortuitiously, implemented. The political initiatives of 1959 to create room in Labrador for Newfoundlanders affords one

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[17] Brox, O., op. cit. p. 53

such example; the development of rural industry in 1951-56 (admittedly poorly conceived and executed) is another example which realised short-term improvements; on a larger scale, the political 'lift' afforded by Confederation with Canada in 1949 clearly brought benefits which diminished the need for migration. Given these altered premises, it is clear that findings suggesting that economic weaknesses cause rural out-migration serve little purpose, for it is apparent that in certain politico-economic syndromes, rural economic weakness itself is an integral part of an unbalanced system.

A final point should be made on the utility of geography, and particularly population geography in this type of social and economic analysis. It will be clear from the foregoing remarks that any single social scientific persuasion is inadequate to analyse and explain all the processes comprehended by migration. It is claimed however that the examination of the spatial dimensions of migration is at least as useful a point of entry as most modes of analysis into this complex and difficult manifestation of social order. A particular contribution made by population geography is in the delineation of areas, fields and regions of greater or lesser uniformity and coherence: one applied value of this type of analysis lies in the counsel which may be offered when socio-economic policy, which tends to be uniform for large areas, is being debated. In the wider

sphere, provided that the larger and essentially non-geographic analyses are used to put the geographic facets in perspective, this form of study furnishes a positive contribution to scholarship and polity.

Envoy

The quotation from W.H. Auden's 'Hermetic Decalogue' is an appropriate cautionary note for inclusion in the summary of an essay in Newfoundland social science. Auden sees the world as comprising two classes of people:

> "the priggish pompous followers of Apollo who manage the world ... (these) reasonable, respectable, responsible Managers exhibit a complacent secularism which prevents them and their subjects from being aware of religious issues; they believe in salvation through politics."[18]

The followers of Hermes (amongst whom the poet counts himself) are, on the other hand:

> "erratic, unruly, individualistic ... (they) are unpredictable, recalcitrant individuals for whom secularism can never satisfactorily account nor provide ... the poet therefore advises the individual to remain non conformist, to refuse to bow down before the secular political god and, trusting in God and aware of the true ultimate issues, to take short views."[19]

At the conclusion of this study, I have come to suspect that Newfoundlanders are fundamentally Hermetic. But I admire

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[18] Spears, M.K., The Poetry of W.H. Auden: the disenchanted island, New York, 1963, p. 187.

[19] loc. cit.

the followers of Hermes and attribute to their recalcitrance and unpredictability some of my difficulty in fitting them into Apollonian models of reality. I do not regret this difficulty, but do hope however that the problems of migration will yield to a little Apollonian political salvation.

Lest this literary allusion be thought inappropriate, here is a similar sentiment written by a geographer faced with the same problem but in a different country:

> "I have tried to describe the environment in which I work as a geographer. How does this environment influence my views on geography as a science? The study of interactions, of gravitation and centrality, diffusion processes and other forms of spatial dynamics, leads us to a better understanding of the complexity of the observed environment. The model building and the statistical analysis which are imperative in studies of this kind may clarify the issues, help us in testing our hypotheses and formulating our theories. It strikes me, however, that spatial problems in a country like Norway, when studied by geographers, are often better explained through an analysis of residuals than by the degree of explanation which the model itself can give us. The relief intensity of the economic and social landscape is often as pronounced as the physical relief itself. Uniquenesses abound, spatial analysis must stay close to the observed empirical data. Inductions from observations more than deductions from a general theory seem to be the most rewarding way of studying this country of margins, barriers and distance frictions, of complex advance and retreat of settlement, of too much space and too few people." 20

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[20] Hansen, J.C., "Region Disparities in Norway with reference to marginality", paper presented to the Institute of British Geographers. 1972, p. 14.

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Appendix 1

Description of Data Categories for the Multiple Regression of Chapter IV

NETMIG - rate of net-migration per 1000 mean population

POVERT - percentage of the population-months in each district spent on able-bodied relief (welfare)

AVINMA - average income of male labour force in each district at beginning of each period

AVINFM - average income of female labour force in each district at beginning of each period

LAFOMA - percentage of male population in labour force in each district at beginning of each period

LAFOFM - percentage of female population in labour force in each district at beginning of each period

MLFFIS - percentage of male labour force in each district engaged in catching and curing fish at the beginning of each period

GP1524 - percentage of the total population in each district in age group 15-24 years at beginning of each period

GP2534 - percentage of the total population in each district in age group 25-34 years at beginning of each period

SIN15+ - percentage of the population in each district single and above the age of 14 years (excluding those widowed and divorced) at beginning of each period

SIMARA - ratio of single males to single females in category SIN15+ in each district

CWR21 - fertility levels derived from the child-woman ratio for each district 15-20 years previous to migration period being examined - in this case 1935-45

MCBR 2631, MCBR 4045 - fertility levels derived from the mean crude birth rate for each district 15-20 years previous to the migration period being examined - in these cases 1945-51 and 1961-66

CWR35 - fertility levels derived for each district from
CWR45 the child-woman ratio for the beginning of each
CWR61 period analysed - 1935-45, 1945-51 and 1961-66 respectively

TOTPOT - total population potential of all urban growth centres on each district being examined at mean population of each centre for each period

Note: the signs in Table 4.1 sometimes appear to contradict the hypotheses discussed in the text. This contradiction is in fact illusory and is a function of the manner in which the dependent variable NETMIG is entered into the calculations: NETMIG is nearly always a minus quantity and appears (statistically) to be falling (e.g. -10 to -20) when in fact it is rising.

Appendix 2

The Data Sources for Contemporary Labrador Migration

There are unfortunately no published accounts from which data on the source areas of contemporary Labrador migration may be obtained. To repair this deficiency, the personnel records of all the major agencies hiring workers for employment in Labrador were studied. Five major sources of this information were examined both in St. John's and in Labrador: the records of the Royal Canadian Air Force and United States Air Force Civilian Personnel Offices provided data on recruitment to the Goose Bay area; the Personnel Offices of the Iron Ore Company of Canada and Wabush Mines provided data for recruitment to Western Labrador. In addition the Canada Manpower offices in St. John's and Wabush provided data on the 'floating' labour force (i.e. those not hired directly by any one of the major agencies) seeking work in Labrador. In all, approximately 10,000 names of workers who moved to Labrador were extracted from the various personnel records and subjected to analysis.

These data, though both unique and valuable, do have severe limitations. Firstly, there are wide variations in the quality of the data culled from different sources. The most detailed records made available, those of the U.S.A.F. were unfortunately incomplete in time coverage.[1] The R.C.A.F. records on the other hand, were individually less detailed,

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[1] During fieldwork in 1967 and 1968 on U.S.A.F. records, the only files available were those (i) of individuals still employed; (ii) individuals previously hired who had left employment since 1964. Thus those hired and leaving before 1964, and not rehired later, were not recorded.

but more complete in their time coverage, though even here gaps in the early records may be inferred (see Table 5.2). The mining company records were individually brief, but otherwise well balanced and complete.

A second limitation is that the records relate almost entirely (approximately 90%) to the hiring of a male labour force. This is not to say that female labour was not hired or was not needed in Labrador, but the inference must be made that it was derived largely from the 'floating' labour force and the dependents and quasi-dependents of the male labour force. By this same token, the data do not measure the total weight of the population movement to Labrador.

A third limitation, which is more fundamental, is that the records do not unambiguously measure migration in the strictest sense. Instead they more accurately measure mobility and interaction between the source areas and Labrador. Some of the workers, for example, might have moved to Labrador and, at the time of data collection, have been there five, ten or twenty years. Others might stay only months or even weeks. Others might return season by season over a period of years.

This varied sequency of possibilities, perhaps unusual to Western urban industrial economies in which protracted periods of wage-labour are seen as a desirable norm, is not unusual in Newfoundland, where a system of occupational pluralism is embraced: that is to say, the Newfoundland

labour force, for reasons of economic and ecologic necessity, has traditionally adapted to a large number of short term jobs, rather than to one or two permanent openings.[2]

The data limitations are, however, counterbalanced by certain virtues which derive from the peculiar location of Labrador. Access to Labrador has been, and still is, both difficult and expensive. Thus, at least in the earlier phases of development, relatively few workers 'floated' into Labrador looking for jobs. Workers were generally hired under contract at a limited number of departure points and their passages paid in and out. Travellers without work documents or bona fide business were not allowed on the aircraft at the point of departure, or were turned back by police at the point of arrival. In this latter case, the airline was required to carry the traveller back as a non-paying passenger, and this in turn increased the airlines' zeal to restrict travel to those with work contracts. In essence, Labrador, as a focus for population movement, functioned as a strictly bounded and limited system with controlled and largely measurable access. For these reasons, the company personnel records constitute a more than usually faithful account of labour mobility.[3]

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[2] See Brox, O., Maintenance of Economic Dualism in Newfoundland, St. John's, 1972.

[3] Most of this information was given in interviews with Mr. R. Blair, Civilian Personnel Officer, R.C.A.F., Goose Bay from 1959-1967.

In light of the above limitations, the records were used to retrieve very simple but broadly comparable data from the different sources. Names, community or area of origin, and date of movement were the principal data recorded. These data when analysed provided ample evidence of the source areas for the Labrador migrants.

Appendix 3

Description of Data Categories for the Multiple Regression of Chapter VI

LABMIG - ratio between observed and expected movement to Labrador for each group of settlements in Labrador Migration Field making up Enumeration Areas (i.e. each statistical unit)

LAPOMA - percentage of male population in labour force in each unit in 1961

MLFFIS - percentage of the male labour force in each unit engaged in fishing in 1961

FLTEMP - percentage of labour force employed 40 weeks or more during work year 1960-61

AVINMA - average income of male labour force during work year 1960-61

MG1524 - level and direction of migration of males in the age-group 15-24 years over period 1961-66

MG25-34 - level and direction of migration of males in the age-group 25-34 years over period 1961-66

SIN15+ - percentage of the male population single and above the age of 14 years (excluding those widowed and divorced) in 1961

SIMARA - ratio of single males to single females above the age of 14 years (excluding those widowed and divorced) in 1961

HSPLUS - percentage of male population who had attained the educational level of Grade 9 in 1961

CARDIS - distance to St. John's from each unit

INFFLD - strength of the Labrador information field in each unit - calculated as the mean strength of all settlements in the unit

LABFIS - strength of traditional association with Labrador - calculated as the mean of th percentage of the population of each community going to the Labrador fishery in the years 1900, 1910 and 1920

Appendix 4

Definition of 'migration field', 'migration region' and 'mobility transition'.

A migration field is the area from which migrants are drawn to any one place. Commonly, the migration field will decline in intensity with distance from the focus or destination. With increasing distance from the focus, the field may cease to be continuous and become broken into a series of discrete islands, each marked by a transmission rate of migrants to the focus higher than surrounding areas.

A migration region denotes an area in which total circulation within the region is more powerful than the total movement to and from other areas (i.e. external movement).

The mobility transition postulates a regularity in the evolution of mobility (of which migration is but a part) which is a function of both space and time. With the passage of time mobility (i.e. a spatial phenomenon) increases according to a regular pattern. This is seen to be, to a considerable degree, a function of the process of modernisation.

Appendix 5

The 'districts' of Newfoundland

Throughout most of this work, the areal units employed are those of 'districts' i.e. political districts at the colonial or provincial level. Until Confederation in 1949, all administrative decisions and all data collections (e.g. Censuses, Vital Statistics) were made on the basis of these political divisions which reflected, to a reasonable degree, the geographical realities of the colony.

After Confederation most of the data collecting duties were assumed by the Federal Dominion Bureau of Statistics. The D.B.S. divided Island-Newfoundland into nine Divisions for Census purposes, but these Divisions are too few and too coarse to be of much use in detailed geographical research. Therefore in this work, the pre-Confederation districts i.e. the political districts are utilised as areal units down to 1966 - this imparts more accuracy and continuity to the analysis. The data for these districts were aggregated from Census sub-divisions and Enumeration areas in post-Confederation Censuses.

The districts have not remained unchanged in area since they were founded in the 1830's. In general, there has been a pattern of subdivision of formerly large, sparsely populated frontier districts as populations grew. The distribution of the districts, and some indication of the 'splitting' process, are indicated on the Endpiece and the accompanying notes.

Notes

1) Upper case - main electoral districts used throughout
2) Lower case - subdivisions of main districts following 1921 - used where feasible
3) French Shore - designation for White Bay, St.Barbe, Humber, St.George's-Port au Port through most of 19th century
4) Twillingate - up to and including 1921 census took in Twillingate, Green Bay, Grand Falls and Gander

Endpiece: E
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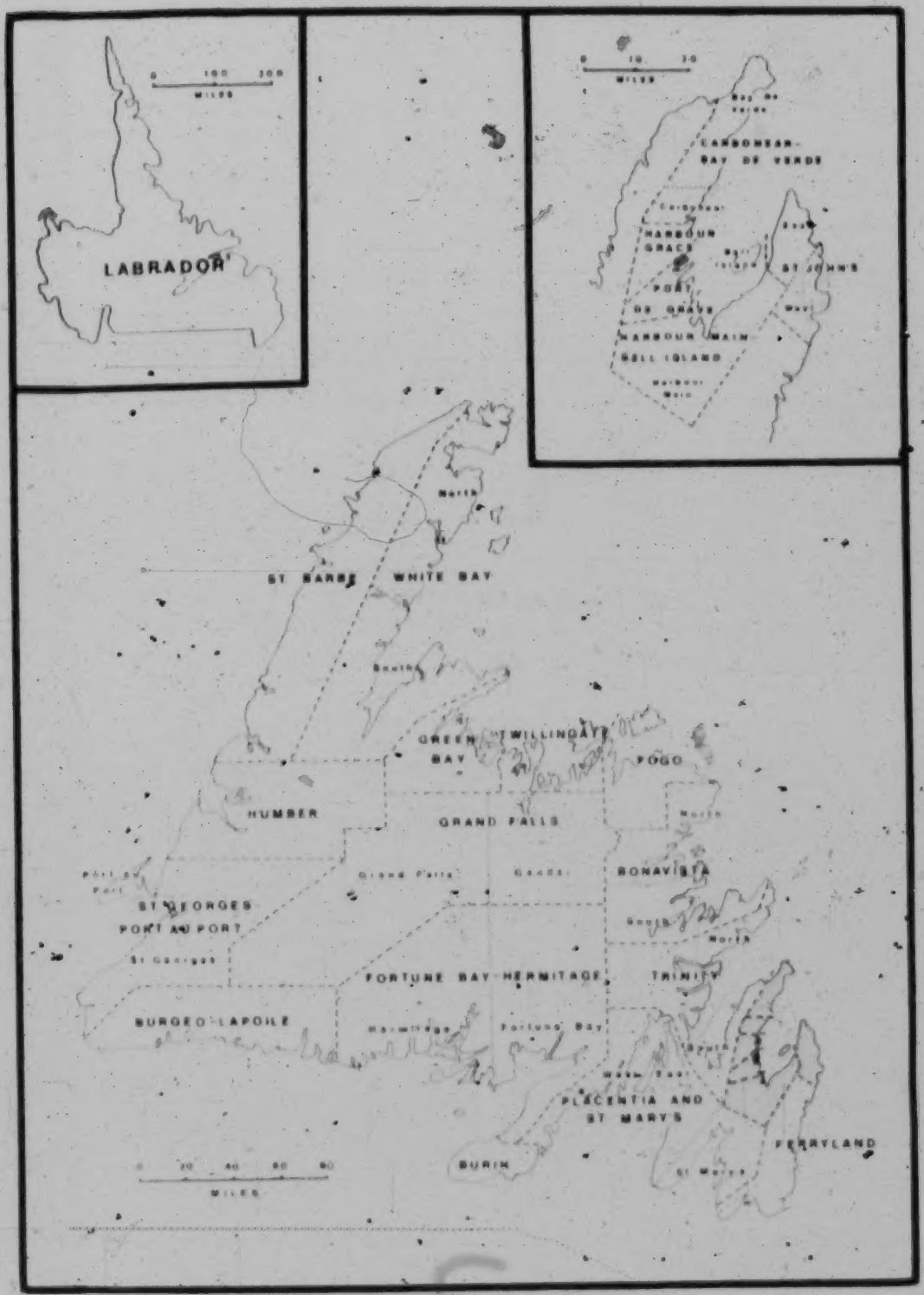

Endpiece: Electoral Districts of Newfoundland as used in this study